# EPISTEMICS:

## The Science-Art of Innovating

J. Samuel Bois

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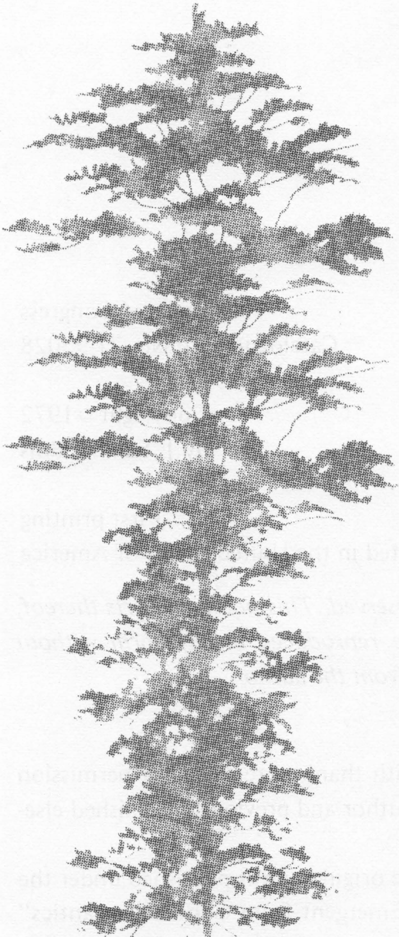

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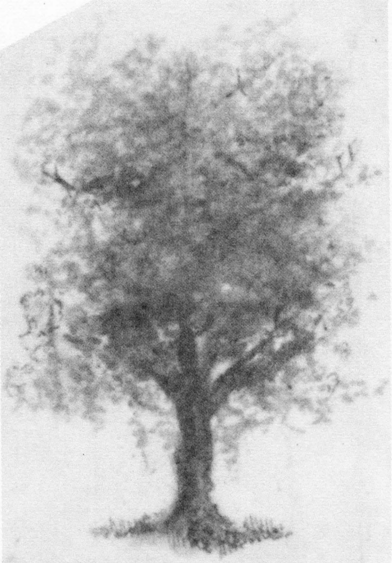
To
Ethel Longstreet,
co-founder
of Viewpoints Institute,
where
Epistemics was born.



*As the wood of the tree is a by-product of the activity of the sap that it locks in definite channels, so theories and institutions are the by-product of man's creative energies, which they channelize and direct to produce the fruits of our culture.*

—From "A Meditation on WIGO"
(chapter 15), p. 164.—Ed.

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# Foreword

Dr. Bois is writing about a new order of knowing, a knowing based on biological expression; the upright posture of man was, in the same way, a new knowing. He traces ways and systems of knowing that were dominant in our culture and in mankind. He clearly spells out the developmental stages of human history that reflect the developmental stages of our humanness. He shows us—analogous to a child on its way to adulthood, passing through stages of world knowing—the emergence of our own youthful ways of development and knowing and how we have outgrown some or are still stuck in others. From this wide and deep perspective, he presents a philosophy of transition, a conceptual framework for contemporary man. Neither a futurist nor a condemner of the past, he is a man who believes in the open-endedness of life process in the tradition of Sri Aurobindo and Teilhard de Chardin.

Epistemes are the general systems of knowing that are dominant in a culture at different times of history. Our own culture is derived from previous epistemes that go back to Judeo-Christian and Greco-Roman origins. These general systems of knowing determine our patterns of speech, action, writing, establishment of rules and practices and, in general, the way in which a culture perceives the world and its relationship to it. They are also the basis of our inner dialogue by which we, as individuals, maintain an open-ended growth process with the world or hamper ourselves by trying to make an old view work.

We are experiencing the emergence of a new episteme, which, as yet, has no name or description. We feel it; the children experience it and are it. We perceive the world as floundering; as in other crucial ages, mankind describes the change as the apocalypse, doom, chaos. However, what appears to be a crumbling of the past or a denial of previous tradition is only the symptoms of shaking off the old—or better still, the peristaltic waves of birth. This new emerging episteme is the herald of the new development of man; the baby is being born, but we don't yet know its shape and form. It first has to grow up.

DR. BOIS suggests that this episteme may be the basis of a new educational approach, one that includes knowledge of self in relationship to the world. Man, seen as a developing whole, transcends rationalism and a static way of being and evolves a new science, new political and institutional structures, and new relationships between man and woman. This would be a true education, one that gives the tools for a life of self-learning and discovery.

Man reflects the evolutionary principle, and his innovative capacity is a direct expression of this function. Man is an open-ended process; he maintains this quality through his innovative capacity by being able to conceptualize and invent different solutions to different situations, to create new life styles, to form new family and political structures. He is able to create new roles and behaviors in which he is as much a changer as he is changed.

In Dr. Bois' system, participation is the highest form of developmental expression, akin to states variously described by other systems as *samadhi*, grace, enlightenment, *kensho.* This participating state of being is always a becoming, because it is in concert with the evolutionary dynamic in all levels of existence—social, cosmic, chemical, etc. By becoming more deeply a participant, the ever-emerging is revealed. This emerging is an experiencing eventfulness; it is a feeling, deeply contactful, nonverbal. I suppose one could call it, in the words of a famous Tibetan monk, "awareness in action."

Sam Bois' gift to us is the identity of this new emerging way of knowing. With startling clarity, the reader will find himself carried along a broad light of evolutionary development and a framework from which to build a new science of continuing becoming.

—Stanley Keleman

*Berkeley, California*
*12 June 1972*

# Preface

ALL ASPECTS of our lives are in evolution. Our world is assuming new characters every year, and we are changing also. The practices, values, and institutions that were in fashion a few years ago are questioned, challenged, or replaced by what none of us could anticipate in the recent past. For this life of ceaseless change, we want directives that are flexible enough to fit new conditions and dependable enough to give us the security for which we yearn.

To satisfy this need for new directives, people in the past wrote descriptions of imaginary worlds, which they called *utopias.* These were lands where everything was as perfect and as smooth-running as the author could depict. When we examine these utopias, from Moore and Bacon to Skinner and Huxley, we find that they lacked the radical originality that is needed in these days of cultural mutation; they were, in all cases, improvements or corrections of the conditions in which the author happened to live. Once we accept that the cosmos is in evolution, meaning that it is made of a series of emergences, none of which could be anticipated or foretold in the conditions that preceded it, we need more than clever projections from the present into an imagined future.

I suggest a new science-art of utopia designing. I see it as an emergent from general semantics, the system invented by Alfred Korzybski to shake us loose from the shackles of the aristotelianism imbedded in our subject-predicate language, and after much thinking and reflecting, I called it *epistemics.*

It is only recently that we have had the mental resources to create this new discipline. New sciences of men have come into existence since the beginning of this century, and this is most fortunate. Their findings offer possibilities that were not available in previous generations, and from them we can derive formulations and directives that may help us in our present stage of unprecedented puzzlement. From these sciences has emerged a new epistemology, and this has given birth to epistemics, the discipline of guided awareness and self-management in a world undergoing a continuous transformation. We do not write utopias, we design our world-in-becoming as it actually emerges out of the past into the future, within us and about us.

ONE OF THE FINDINGS of the new sciences of man is that when I write an essay or a book I am simply putting in an order of my choice the information I have accumulated through my experience and my studies up to the time at which I write. I am making verbal structure of what I know and of what I anticipate for the immediate future. If the structure conforms to the cultural fashion of the day, it will be easily accepted. If it is too far ahead of the time, it may be ignored or rejected outright. Time only will tell whether it has the makings of a permanent landmark on the road of history.

One of the key principles of the new epistemology is that there is a difference between what I know and the "real" world I claim to talk about. In fact, what I know is the only real world for me, and what you know is the only real world for you.

When we both speak of "the real world," as if we were speaking of the same thing, we are both under a delusion: we assume that what I picture to myself as *the* world is what you picture to yourself as *the* world. Our two worlds may overlap to some extent, as they undoubtedly do as you read these lines, but they do not coincide in all respects.

I read not long ago a remark made by a fellow psychologist that sounded rather unusual, something I could hardly believe he meant. "This essay," he said, "is made of half-truths."

After a bit of reflection, I began to realize that if he meant his statement literally, he was claiming much too much. The statements we make cannot be split in half—half truth and half untruth. We don't know what is the proportion of knowledge and ignorance in whatever we say to others or to ourselves. We cannot measure what fraction of reality we describe, even when we write a scientific essay. One of the latest views of reality, the one that I accept, presents it as a multidimensional cluster of ever-changing processes, which we chop into bundles that we classify as persons, things, situations, possibilities, and potentialities. How deeply we actually penetrate that world of ongoings, we don't know. When we make a statement, we are simply expressing our own reaction to a fragment of the world of processes. We may examine that small bit of our personal experience, compare it with that of others, and venture some interpretation if we wish. But I had better not take my own package of experiences, which has grown to its present size in half a century or more, as the miniature of the world of cosmic ongoings that have been in operation for uncounted billions of centuries and have spread into limitless regions of space.

We have a word to express that: we say that the world of reality is *infinite,* meaning that it has no limits that we know. Within this overall infinite, each fragment that we take as a unit has an infinitude of its own: from the outward appearance that we can perceive with our senses at the macroscopic level it expands in finer and finer complexity at the microscopic and submicroscopic levels, until its structure is lost in the moving realm of pure action. Years ago, I coined a term to cover that mysterious space-time infinity. I called it *WIGO,* or *What Is Going On.*

Directly by personal experience or indirectly by the experience of others, I have abstracted from that WIGO bits and pieces that I put together to satisfy my curiosity or to suit my purposes. I left a great deal aside, either because it did not suit me at the moment or because it was beyond my mental reach. This much larger segment of WIGO I call the *etc.* It is the world of what I don't know, or of what I know to some extent but do not take into account. I cannot measure the dimensions of *etc.*; it has no limits of which I know.

HOW DIFFERENT is the view from what I was told when I entered my junior year at college and began the study of philosophy! There, I was led to expect that this queen of the sciences would unlock for us the mysteries of the universe. It was the science that would reveal the *ultimate why* of everything. It was not *a* philosophy; it was *the* philosophy. As we went along, all other philosophies were victoriously refuted, and none but the aristotelian-thomistic champion was left in the field.

Most philosophies present themselves as *the* philosophy, as the adequate picture of the world at the time they are published and for all times thereafter. The refutation of other doctrines may not be so explicit as it was in our textbook, but it is implied. Each new one is *the* philosophy to end all philosophies.

The present book is not written as *the* philosophy. It is *a* philosophy, that of a particular individual living in a particular environment at a particular time of history. If it helps you form your own, all the better. I hope it does. I offer it as my contribution to our common world-in-the-making.

—J. S. Bois

# Introduction*

FOR CENTURIES the picture that Western man had of the world was spread on a triptych. The first panel represented the realm of *matter;* the second, the realm of *life;* the third, the realm of *mind.* Matter, life, and mind were the basic categories of empirical knowledge. Those three groups of phenomena—or *natures,* as they were called—were utterly unlike one another; their differences were ultimate; no bridge of thought could link one to another, except in abstract metaphysics.

It was generally accepted as a fact that this tripartite universe had come into existence 4,004 years before Christ, during a most eventful week that God had devoted to the work of Creation. The sacred text read: "God saw everything that he had made, and behold, it was very good. On the seventh day, God finished his work which he had done, and he rested." Since then, the world had remained identical with itself. Whatever changes were recorded in history had brought none but superficial modifications of the permanent nature of things, plants, animals, and men.

The triptych had no time depth prior to the week of creation. Time itself had come into existence in the same week. Before its clock began measuring days, months, and years, there was eternity, with God and his angels, good and bad, the world of the supernatural known by revelation and theology. Compenetrating the world of matter, life, and mind, there was a misty and mysterious world of the preternatural known in the sciences of the occult and contacted by the arts of magic—the world of

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ghosts, gremlins, goblins, elves, leprechauns, sylphids, werewolves, and such.

By the beginning of the nineteenth century this static picture of the empirical universe began to grow a third dimension behind the flat frame of the triptych. First, it extended for only a few centuries back of the fateful week of creation. Later, it stretched out in millions and billions of years to a beginning that became lost in the mist of cosmic events. Along that time dimension, spectacular changes were found to have happened in the material composition of the earth strata and in the sequence of plants and animal species. Eventually, a linkage between the three panels of the triptych became imperative; it became evident that life had emerged from matter and mind had emerged from life. The concept of creative evolution over eons of time had to replace the concept of the one-shot creation at a definite date.

THE CHANGE in the general orientation of scientific thought came slowly, almost insidiously, until a book entitled *The Origin of Species* came out in 1859. Its author, Charles Darwin, was a natural scientist, as they called them in those days. He dealt with the second panel of the triptych—that of life—and he contradicted the then prevalent belief in the fixity of plant and animal species. The world of empirical science has never been the same since.

As is the case with most eventful discoveries and inventions, Charles Darwin was not alone in challenging the common-sense view of the universe. He had been preceded by his grandfather, Erasmus, and by Linnaeus, Buffon, and de Lamarck. He was accompanied in his own generation by such men as Alfred Wallace, Charles Lyell, William Hooker, and Boucher de Perthes. As a group, they gradually pushed back in time the appearance of the planet Earth and of the biosphere that wraps it up with a net of living forms. With the recent invention of chemical dating, we are now able to measure with greater accuracy the time distances that separate us from prehistoric events. The whole cosmos is now seen through the concept of evolution, development, and aging. There are young and old stars, galaxies, quasars, and pulsars classified as to the length of their duration.

From the central panel of the triptych, evolution has invaded the first one—that of matter—and it has linked the first and second panels together in a postulation that gains more plausibility from year to year. Pasteur may have been right when he stated that, in our present cosmic era, living forms have to come from living forms; but he has not proved that it had always been so in the earlier stages of cosmic development.

The third panel of the triptych—that of mind—had for many years an ill-defined boundary with the second. When did *Homo sapiens,* the modern man clearly characterized by his power of symbolization, appear and become a permanent resident of this planet? Was he the same as the various hominids, tool users, and tool makers whose remains are dug out in distant parts of the globe? Was he the same as the powerfully built Neanderthal who phased out at the third interglacial? Or is he identical with the Cro-Magnon who made his entry some 37,000 years ago and left the unmistakable records of his painting, engraving, and sculpturing?

It seems generally agreed that this Cro-Magnon belongs to the third panel—that of the mind. Himself a product of evolution from matter and life, has he continued, as *Homo sapiens,* the ongoing process that made him what he is? Or is he in this twentieth century exactly the same as he was when he painted animals on the walls of the caves at Altamira and at Lascaux; when he buried his dead, with an apparent belief in an afterlife, in the soil of what is now Czechoslovakia; or when he used as sacred fetishes the statuettes of fertility Venuses we find here and there?

THE ANSWERS to these questions will vary according to what one takes as an adequate description of members of the human species. If they are seen as made of two mentally detachable parts, a body and a mind, the answer is that they are probably the same in body—or genetically—and possibly different in mind—or culturally. Children taken out of their cultural environment immediately after birth and reared in an entirely different milieu take on the attitudes and the manners of this milieu. Once they have reached adulthood, they are hardly distinguishable from their foster brothers and sisters.

What can happen in such individual cases does not take place when a cohesive group of people from a less-developed culture are transplanted into a more sophisticated milieu. A gradual process of acculturation takes place. It takes two or three, and in some cases even more, generations for a cultural transformation to be achieved. The larger the group transplanted into a new environment, the more laborious is the process of acculturation. There are times when it fails utterly.

From this it seems that when we change our unit of observation from the individual to the group the process of acculturation becomes entirely different. When we study the psychosocial evolution of mankind as a whole, where distinct stages of culture succeed one another, we have to pass from individual psychology to cultural anthropology. We see man growing at one with an all-pervading mode of existing, of relating himself to himself and to his surroundings. This makes him different in most respects from members of other cultural groups. I introduced the idea in my recent book, *Breeds of Men,* in this way:

> An Eskimo child, born on a certain day in an isolated igloo on the icy waste of the Arctic, enters a world very different from that of a city child who comes into the world on the same day in the delivery room of a modern hospital. From their first breath, they will be in contact with things and people that are not alike, with a world of personal experiences that will become for each of them the only world they will ever know. In these two dissimilar worlds, both will become adults and function in two groups of fellow humans that have very little in common. Eventually each will die, uniquely affected by differing degrees of environmental health conditions. Caught in the activities of two mutually exclusive cultural theaters, they will not have known each other or exchanged any message. They could have been born on two distant planets and not have been more separated in their conscious existence.
>
> From this pair of unmatchable specimens of our species, seen from a distance that reveals their dissimilarities in places of abode and stages of technological development, we may come closer to the people with whom we live. At the macroscopic levels of common-sense observation, they have a great deal in common; but at the microscopic and submicroscopic levels of scientific examination of their total functioning, we detect differences that are most significant.
>
> It is in a world only recently—and so far incompletely—surveyed by a limited number of pioneers that these differentiating characteristics are to be found. This world is called the world of *episteme* by Michel Foucault, author of a book on what he describes as "an archeology of the sciences of man." Episteme, for Foucault, is the "general system of knowing," and he notes that it is only in our

day and age that attempts have been made to take an inventory of that system.[1]

This general system of knowing is not limited to thinking, teaching in schools, lecturing in public halls, writing articles in periodicals, or publishing books. It eventually materializes into institutions, organizations, and practices in business, politics, education, family life, etc. It is the *logos,* or the principle of intelligibility of the totality of a civilization at a moment of history. It is what Lewis Mumford talks about when he speaks of the "megamachine," what Charles Reich calls "Consciousness II," what Zbigniew Brzezinski describes as the "technetronic age." It is in this world of episteme that deep-reaching disturbances occur at the present time. They are seen as a conceptual revolution by Percy Bridgman, a conceptual metamorphosis by Lynn White, Jr., irreversible changes by Peter Drucker, and new system-functions by Alfred Korzybski.

Mutations they are indeed. These mutations in the evolutionary sequence of cultural breeds of men are analogous to the biological mutations of the second panel, which marked the emergence of new species of plant and animal life, and are likewise analogous to the distinct geological strata that show the eras, periods, and epochs of the life of the planet Earth.

THE STUDY of the third panel of the triptych model of the empirical world is relatively recent. In fact, the notion of evolution took a long time to bring about a change in the philosophical orientation of writers, thinkers, and teachers. Sir Charles Sherrington wrote in 1940:

> It is perhaps more surprising that it should have dawned upon the human mind only so latterly that his planet was a place of fresh shapes and powers of life. It now gives him a new conception of his planet and of his place there. The constant intrusion of each novelty into this world had escaped the notice of his forebears of antiquity. It had not escaped them that the world shows changes. But its changes they had glimpsed as recurrent cycles of changes. A progressive change which could be shown to have produced the novel and then scrapped it, and produced the more novel and then scrapped that, and was still going in like fashion generating and trying out the novel, without halting, must be doing something which leads somewhere. That was the conception antiquity had not reached. Their factual knowledge was not adequate to it.[2]

Until a very few years ago, no one had devised a name that could give definite boundaries to the field of study that lay in the third panel of the evolutionary picture of the world. It was still covered by the old static category of *mind,* and its complexity as a process was merely guessed.

In the correspondence they exchanged in 1932-33, neither Korzybski nor Bentley could agree on a term that would cover the field they were in. Korzybski had played with such terms as *humanology, human engineering,* and *general theory of evaluation,* but found them all unsatisfactory. He eventually opted for *general semantics,* and Bentley agreed, although both had serious misgivings as to its appropriateness. Later, in 1952, Bentley published an article in *Science* which he entitled "Kennetic Inquiry," meaning by this new word *kennetic*—from the Scottish *ken*—a combination of knowledge and power.[3] In 1949 he had coauthored, with John Dewey, a book entitled *Knowing and the Known,* where he had referred, as had Korzybski in *Science and Sanity,* to the epistemological aspects of their work.[4] But all three of them—Dewey, Bentley, and Korzybski—had to leave the terminological problem unsolved. This was, no doubt, much to their chagrin, because they felt that the efficiency of a science lies in the ability of its proponents to keep its key terms steady at every stage of its procedure and in exchanges with members of other disciplines.

As a consequence of this vagueness, those of us who have continued the work of Korzybski have been for years in the ridiculous situation of people who claimed that we were dealing with improved methods of communication while we were unable to give to our own discipline a name that made sense to outsiders.

This long and painful period of confusion has come to an end with the publication of Michel Foucault's book *Les Mots et les Choses,* which appeared in an English translation under the title *The Order of Things.*[5] Foucault revives the notion of epistemology, which James Frederick Ferrier, the Scottish philosopher, introduced by the middle of the last century, but he gives it a broader meaning than the one we find in current literature. Instead of restricting it to a theory of intellectual knowledge, of which logic is the main part, he uses it to cover the general system of knowing-feeling-behaving that constitutes the dynamic background of our ostensive behavior. This general system—properly called *episteme*—determines the pattern of how we speak, write, act, establish rules and practices, and set up permanent institutions. It refers to what I have called in my book *The Art of Awareness* our *structured unconscious.*[6] "In a culture at a certain date," writes Foucault, "there is only one episteme; it determines the conditions that make possible any kind of knowing, whether this knowing expresses itself in a theory or is silently embodied in a practice" [p. 179].

AND SO, we now have three clear-cut terms to describe what we are busy with. All three are implied in the tradition of general semantics.

1. *Episteme,* or the general system of knowing that was dominant in our culture at different times of history. The present one has emerged from previous epistemes that go back to our Judeo-Christian, Greco-Roman origins as a civilization. Each of us has his own individual version of it in what I called elsewhere our *structured unconscious.* This can be described as the dynamic pattern of attitudes, habits, internalized values, modes of perceiving and thinking by which each person relates himself to the world of things and people, observes and judges their activities, and expresses himself to himself and to the world by what he thinks, says, and does.
2. *Epistemology,* or the science of episteme. It obtains information from a continuous survey of all the sciences of man, organizing their findings in a set of postulates and formulations that aims at being simple and teachable.
3. *Epistemics,* or the discipline derived from epistemology. It views the whole of humankind and each individual as organisms engaged in a process of evolution. It takes *Homo sapiens* as the only form of life that can influence the course of his own evolution. It has for its objective the knowledge and the practice of the skills of awareness and self-management.

In a sense, this is a new science and discipline. Or, better said, it is an attempt to translate into scientific terms the wisdom of the ages, including our own as the most advanced. Epistemics covers the whole range or man's activities in the arts, in science, in politics, in administrative work and business transactions, in person-to-person encounters, in family life, in education—wherever and whenever humans are functioning.

It sounds like an ambitious program, and it is; but it is not proposed in a self-complacent or arrogant spirit. It is an endeavor to bring up to date and make more teachable the wisdom of the brightest brains and the most dedicated souls of yesterday and today.

I have already stated that epistemics is in the tradition of general semantics. Both Korzybski and Gaston Bachelard, his French commentator, were aware of what the latter called "a kind of progress that is beyond all argument." "It is," he continues, "the progress of science seen as a hierarchy of knowledges, measured specifically along their intellectual dimension." Elsewhere he calls these epistemes "coefficients of reality," which give each succeeding generation a better hold on the world of phenomena.

In *Science and Sanity,* Korzybski suggests three stages of human development, characterized by their standards of evaluation:

1. The prehuman and primitive period of literal, general, and unrestricted identification.
2. The infantile, or aristotelian, period of partial and restricted identification, involving the law of identity and taking the nature of things as the core of knowledge.
3. The adult, or nonaristotelian or scientific, period based on the complete elimination of identification, establishing structure as the foundation of knowledge, and taking the laws of nature as the dynamics of science.[7]

I owe a great deal to these two pioneers—Korzybski and Bachelard. Had they not blazed the trail, I might never have reached the clearing that surrounds us now. My hope is that someone else will come along and build in that clearing the city of knowledge of man-in-his-world.

IN EPISTEMICS I spread a five-point scale on the original three stages of development described in *Science and Sanity.* The people whose epistemic makeup corresponds to the various periods of the cultural development of Western man are seen as members of breeds that emerge from one another in the course of what Julian Huxley calls our *psychosocial evolution.*

Breed One men are the primitives of all times. For them, what happens in the world is limited to what they experience, and the way they experience it is taken as the way it truly happens. There are people walking the street today who still have such thought forms; they are cultural fossils, surviving specimens of an early breed who have not undergone evolution to full humanness.

Breed Two men appeared in the small country of Hellas some 2,500 years ago. For them, language was the outward expression of the magical activity of their thought, working as a transparent envelope that surrounded them on all sides and put them in knowing contact with the world. They survive in Breed Two men of today who have reached a high degree of self-complacent sophistication. If their professional language happens to be a special language, invented and propagated by a special school of psychology, philosophy, or theology, they claim that the whole world of man is exactly what that language describes. They are the scholarly doctrinaires, the modern schoolmen who delight in arguing.

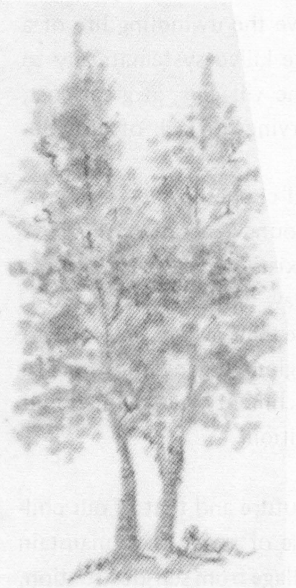
Breed Three men came on the scene in the seventeenth century. Their first representatives were Galileo, Newton, Bacon, Descartes, Leibnitz, and such. They did not change the basic orientation of their predecessors of Breed Two. From nature as the basis of objective knowledge, they passed to the "laws of nature," expressed in the new language of mathematics. Their continuators of today swear by Research, with a capital R. They believe in the magic of quantity: more money for education, more firepower in Viet Nam, better computerized organizations, crash programs to eliminate poverty or crime. They use mechanical thinking as an adequate means of understanding and manipulating events and people.

Breed Four men are still few and far between. They are just beginning to become aware of themselves as different from what their culture has made them. They know more about what they are not, what they cannot do, and what should not be as it is now; but they have less assurance when it comes to describing their recently mutated self and the world that is emerging from our present crisis. They take a broad space-time view of the universe, and they are working on a new philosophy that transcends the clashing symbol-shackled epistemes.

Finally, there are men of a Stage-Five breed, whom I call "participants." At this stage, episteme ceases to be mainly a "general system of knowing"; it assumes new dimensions. It becomes the learned art of experiencing with increasing awareness of the self and the world in a joint prehension. A new life objective emerges: it is not so much to know what is and why it is what it is; it is rather to be at one—feelingly and experientially—with all processes, persons, things, and situations that are our traveling companions in the ongoing cosmos. They live in a world where art, science, religion, and poetry are interchangeable as expressions of man's relating himself to the universe. This stage of episteme could be described as a form of existentialism blended with robust optimism.

## NOTES

1. J. Samuel Bois, *Breeds of Men* (New York: Harper & Row, 1970), pp. 48–49.
2. Sir Charles Sherrington, *Man on His Nature* (New York: Mentor, 1964), p. 121.
3. Arthur F. Bentley, "Kennetic Inquiry," *Science* (Washington, D.C.: American Society for the Advancement of Science, 1952).
4. Arthur F. Bentley and John Dewey, *Knowing and the Known* (Boston, Mass.: Beacon, 1949).
5. Michel Foucault, *Les Mots et les Choses* (Paris: Gallimard, 1966); Eng. trans., *The Order of Things: An Archeology of the Human Sciences* (New York: Pantheon, 1970).
6. J. Samuel Bois, *The Art of Awareness* (Dubuque, Iowa: Wm. C. Brown, 1966), p. 99.
7. Alfred Korzybski, *Science and Sanity* (Lakeville, Conn.: International Non-Aristotelian Library, 1933, 1948), p. 194.



# 1. The Place of Philosophy in the Human Enterprise

"WE LIVE in a tribal village," wrote Marshall McLuhan. I agree with him. The whole planet has become a compact human settlement. Ten thousand years ago, it was very different. Former fruit gatherers and hunters, who had roamed far and wide in search of elusive means of survival, began to gather in hamlets that eventually became villages, towns, and centers of civilization on the banks of a few rivers—the Euphrates, the Nile, and the Indus. Elsewhere, the population spread in various directions, forming clusters in widely separated places. Each group developed its own skills, practices, institutions, and language. We are just beginning to realize that these groups, formerly strangers to one another, have become interconnected technologically, economically, and politically to the point that the whole human population has become as compacted as a tribal village of early days.

The fate of this population has become more and more dependent on the decisions of a few individuals who possess political or economic power in the planetary community. Two huge political factions have emerged that threaten each other with utter destruction and render the existence of the whole village most precarious. Other groups, less privileged, strain every bit of their resources to emulate the big bullies in the game of deterrence.

Epidemics do not ravage the village any more, and the Black Death of fourteenth-century Europe is not likely to recur. Malaria and polio are practically eliminated, but pollution and crowding have appeared in places. Heart transplants are performed to save the dwindling life of a few individuals, while thousands of people are killed systematically to maintain the balance of political terror. Some villagers, at great cost, have gone to the moon, while crowds are starving for lack of distribution methods.

There are misunderstandings, rivalries, and clashes among segments of the population. An active minority of the young generation curse the Establishment that gave them the means of existing in relative comfort and freedom. Some older people clamor for law and order at any cost. Educational institutions are forced to reexamine their own policies and to come out of their self-complacent pride. Religious organizations try to ensure their survival in the ecumenical rapprochment of erstwhile rabid enemies. The whole village is in a painful transition.

WE ALL LIVE in this village; our own future and that of our children is at stake. The human enterprise of today is to maintain our sanity in the present turmoil, to save the village from self-destruction, and to redesign its whole institutional structure. The time has come to take stock of our gains and losses in our four or five hundred generations of experimenting with ourselves and with our planetary habitat. We have to make a wiser use of our resources and of the skills we have developed.

There is one group of our fellow villagers who have done much better than the rest of us. They are the scientists and the technicians. Scientists have acquired information that was not available when our ancestors were on the scene. They have transcended common sense in their methods of thinking. They have invented all sorts of gadgets, instruments, and tools. They are the only group that has developed, across the boundaries of language, religion, and politics, a modicum of consensus among their members. The technicians have taken hold of the forces of nature, and they make them work as energy-slaves that serve us night and day.[1]

Of course, neither scientists nor technicians proved to be uniformly peaceful and altruistic in their behavior. Even in our generation there have been scandalous instances of scientific dictatorship, as in the Lysenko era in Russia, and of persecutory practices, as in the case of Immanuel Velikovsky in the United States. Technicians not only have sent men to the moon, they have fashioned the tools of overkill. Discovery of the energies of nature have created monopolies that exploit fellow humans and pollute the environment.

Nevertheless, it remains that, when we compare their achievements with those of politicians and religious leaders, scientists and technicians have accomplished something that looks like progress. They have created a world that did not exist on the planet when the caveman was eking out an existence.

What is the secret of their success? Korzybski calls them *time-binders,* meaning that, at each generation, they have made use of the skills and the tools invented by their predecessors.[2] They not only have made use of their inheritance, but have added to it, enriched it, and in some cases, transformed it into something that the previous generation could not even foresee. In brief, they eventually achieved so much because they piled inventions upon inventions, creations upon creations. Kenneth Boulding, an economist-philosopher, puts it this way:

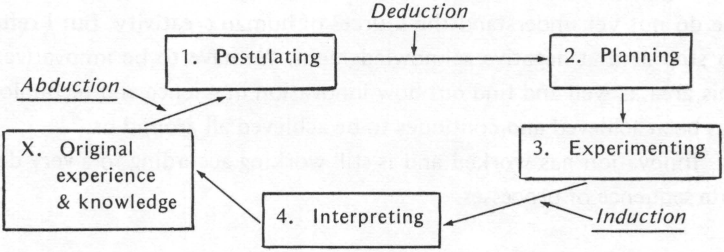
> Production functions are not merely transmitted from one generation to the next in an educational process, for what might be described as a net learning process goes on, which actually improves them in a developing society. . . . Two rather distince processes are involved here: first, *the innovative process by which a new image of a productive process is created in the mind of someone,* which existed in no other mind previously; and, second, *the educative process by which the image of productive process in one mind is transmitted to another.* . . . If there is no innovative process and education is successful, the knowledge of each generation will be transmitted unimpaired in the next. . . . The rate of technological development depends almost entirely on the amount of resources that a society devoted to the innovative process and to the educative process. Of these, the innovative process is the most mysterious. We do not really understand the sources of human creativity.[3]

I agree with Professor Boulding when he says that at the present time we do not yet understand the sources of human creativity. But I refuse to stop at that negative acknowledgment. We have to be innovative in this area as well and find out how innovation in science and technology has been achieved and continues to be achieved all around us.

Innovation has worked and is still working according to a very definite sequence of processes.

1. It starts with an idea, new and untested until then, but plausible to a person who has internalized the knowledge and the skills pertinent to the field to which the idea belongs. This we shall call the *postulating stage.* The mental process that gave birth to it is *abduction.*[4] It emerges from the totality of the life experience of the innovator.
2. *Planning* is the second stage, and it is achieved by a process of *deduction* from the postulate taken as a major premise. Once the postulate has been stated and accepted tentatively, we draw from it definite directives, and we decide how to set up the experiment or the systematic observation that will test the postulate.
3. *Experimenting* or *observing systematically* is the next step. This calls for the exercise of the most sophisticated methods and skills available to the observer-experimenter.
4. The fourth stage is that of *interpreting* the results of the experiment or observation and drawing inferences from it. The process involved is *induction,* carried out according to the strictest rules of this aspect of logic.
5. The interpretation of results is then checked against the original postulate. This postulate is either confirmed for the time being; corrected in part to initiate a new and better cycle of planning, experimenting, and observing, or put aside because it was found inadequate for the purpose. In such case, an entirely new process of abduction is required, based on the awareness of the inadequacy of the former postulate or of its equivalents, often disguised under different verbal forms.

This sequence of processes forms a loop made of four operations: postulating, planning, experimenting, and interpreting. These operations are linked by the skills of abduction, deduction, and induction, as in the following diagram:



The *X* rectangle represents a man's total knowledge and experience at a date. Its value increases as he postulates, plans, experiments, and interprets a sequential series of activities and adds his interpretations to his previously accumulated wisdom (rectangle *X*). As this renewed and enriched wisdom rises to a higher level of organized complexity, the creative loop (postulating-planning-experimenting-interpreting) bends in the time dimension and becomes the spiral of human cultural advance, or personal and cultural evolution.[5]

KORZYBSKI lumped together the four processes of postulating, planning, experimenting, and interpreting, and he called "thought" the bundle thus made. Thought was given as the specific characteristic of man, the time-binder. The creative loop then becomes the appendage that shows the addition of brainwork to mere biological functioning. The *X* rectangle corresponds to what he called the "physicochemical" base of animal life. We describe it now as the genetic constitution, transmitted by heredity and programmed in an unchanging pattern for all the successive generations of a species until a mutation takes place in the evolutionary sequence and the emergence of a new species is brought about. Animals have not the creative loop of thought that postulates, plans, experiments, interprets, and raises itself to new levels of wisdom in a spiral of self-renewing advance. Breeds of animals are genetically determined; they vary within a close circle of specific characteristics; they cannot come out of the original plane of their position in the evolutionary ladder. In the case of men, each creative loop becomes the coil of an advancing spiral, and the successive complex units thus created (men-in-environments) become differentiated to a degree beyond the difference that exists between animal breeds of one species. The differences between species themselves seem to offer a better analogy, since no interbreeding—or viable transactional outcome—is engendered by a psychological intercourse between individuals belonging to different epistemic breeds.[6]

Biogenetically primitive man was, like his animal cousin from whose herds he had emerged, endowed with a physicochemical set of chromosomes programmed according to the evolutionary level reached by life at the time. Until men appeared, thought had never existed on our planet. The fruits of previous thought had not accumulated for them to use. As Cassius Jackson Keyser puts it:

> Long ages ago there appeared upon this planet—no matter how—the first specimens of our human kind. What was their condition? It requires some meditation and some exercise of imagination to realize keenly what it must have been. Of knowledge, in the sense in which we humans use the term, they had none—no science, no philosophy, no art, no religion; they did not know what they were nor where they were; they knew nothing of the past, for they had no history, not even tradition; they could not foretell the future, for they had no knowledge of natural law; they had no capital—no material or spiritual wealth—no inheritance, that is, from the time and toil of bygone generations; they were without tools, without precedents, without guiding maxims, without speech, without any light of human experience; their ignorance, as we understand the term, was almost absolute.
>
> And yet, compared with the beasts, they were miracles of genius, for they contrived to do the most wonderful of all things that have happened on our globe—they *initiated,* I mean, the creative movement that their remote descendants call *civilization.*[7]

*They initiated civilization.* This simple statement is heavy with meaning. There lies the mystery of innovation I mentioned earlier (page 3). It originates in the creative loop of postulating, planning, experimenting, and interpreting. The old definition of man had some sense, after all. We could see him as a former animal, endowed with a particular form of energy that made him specifically different from the animal herd from which he had emerged. It is the energy of thought, the power to create out of his ignorance, the magic texture of institutions, buildings, means of communication, political and economic organizations, laws, practices, and procedures that have made our planet a space capsule different from all the other planets of the solar system.

If we examine the creative loop more closely, and if we picture its development in a four-dimensional (space-time) dynamic complex, we may locate the various sciences and disciplines on the spiral. For instance, deduction dominated the scene for centuries, when philosophers took common language as the repository of axioms or self-evident truths. They did not suspect at the time that these axioms were mere postulates having currency nowhere but within their own epistemic fraction of the human family. At that time, special sciences had not yet acquired an autonomous existence. Philosophy contained them all within its ample bosom. Many centuries later, induction became the prevailing skill, and the scientific evolution unfolded itself in systematic observations, experiments, measurements, and mathematical formulations. The time has now come for abduction to be recognized as basic and not simply the anagogè of probability dimly outlined by Aristotle. We have done away with the delusion of objectivity, and we face, with an undisturbed mind, the responsibility of creating the world of humans that will hold within its structure our own life and that of the next generation. Instead of simply rationalizing about the past findings of science and continuing the metaphysics of former philosophies—in other words, theorizing *above and beyond* the empirical sciences, as the prefix *meta* implies—the philosopher has to take his place in the loop of human creative functioning and assume his share of responsibility in the total human enterprise.

The philosopher's place is at the joining of the loop with the core of human experience represented in the diagram by the *X* rectangle. First, he has to evaluate anew the interpretive results of all the sciences as they reenter the living process of human striving; second, he has to direct the postulating process of creating new theories and doctrines that will guide humankind in the next stage of self-renewal. He does not have to *prove* his statements by deduction or induction. The time is long past when he thought his role was to be assertive, as if he had found the truth revealed to him by Nature (or by God, in the case of believers in revelation). The time has come to proffer, humbly but courageously, alternatives that are plausible to the better informed and genuinely altruistic members of the present human family.

As the philosopher proceeds, he watches his own performance, like the artist who manages the skills he has mastered in years of rigorous and relentless practice. In the case of the philosopher, the training has to be the acquisition of an ever-increasing awareness of his epistemic functioning, profiting from the best that his time-binding predecessors have achieved, and maintaining a critical control on his own thinking-feeling-behaving activities.

The science of epistemology becomes central. It surveys the many aspects of the semantic transactions that lock man and his environment in an energetic unit. Epistemics is the application of the science of epistemology to self-guidance and management; it becomes the professional skill of the up-to-date philosopher.

This new philosopher begins by practicing the skill in simple situations, self-reflexively observing himself as he talks to himself in the plain common-sense language of his cultural milieu. One by one, he will discover some of the inadequacies and the inconsistencies of the symbol system he inherited from ancestors whose ignorance was pervasive. He will practice innovation and propose better constructs. Henri Bergson did so when he woke up to the fact that time was geometrized like space, and he introduced the notion of duration to be perceived by a certain kind of intuition. Albert Einstein did so when he questioned the axiom of simultaneity and absolute time and introduced the speed of light as the measuring rod of the universe.

The task of the philosopher is never finished. He accepts and imposes upon himself the directive that one of his recent predecessors, Gaston Bachelard, offered as a guiding rule in his *Philosophy of No.*[8] He comes to a closure at each step of his advance, but says to himself and his readers: "No! This is *not* the end of the search; it is as far as my postulate leads us at the moment." He is an artist, an architect of thought construction, finishing a new epistemic building and starting on the design of a more advanced one. Or, to use another analogy, he could be compared to an airplane designer who draws out of his knowledge of aerodynamics and recent experiences the model of an aircraft that will surpass all previous ones in beauty, speed, steadiness, and maneuverability. He dreams up and puts on paper new programs of living in full humanness, incorporating the best of the values exemplified in the lives of the great souls, the heroes, the saints, and the thinkers of previous generations, bringing to a higher order of dimensionality the heritage of the past. He is the designer of the best kind of life the human family could enjoy if we made use of the resources of all the sciences of man developed to the time of his designing. The time is past for the philosopher to limit himself to describing the frailties of human nature and denouncing the shortcomings of the establishment that our well-meaning predecessors have set up at a time when their knowledge was more limited than ours. We must innovate boldly, not simply in utopias that stand in contrast to our present situation, or in science fiction that refines on the most sophisticated gadgetry. We must also—and perhaps rather—learn and practice in our routine activities the skill of guided awareness and continuing self-renewal.

WITH George A. Kelly, the psychologist, I am now addressing myself to the common man and not only to the professional scientist or philosopher. In his book, *The Psychology of Personal Constructs,* he suggests that we pass from looking at *man-the-biological-organism* to looking at *man-the-scientist.*

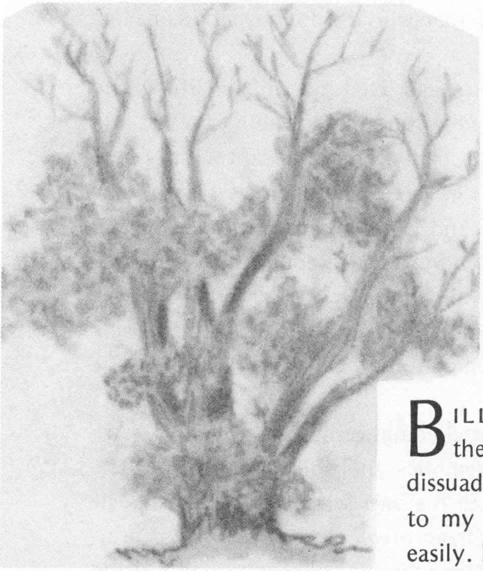
> At this point we depart from the usual manner of looking at things. When we speak of *man-the-scientist* we are speaking of all mankind and not merely a particular class of men who have publicly attained the stature of "scientists." We are speaking of all mankind in its scientist-like aspects, rather than all mankind in its biological aspects or all mankind in its appetitive aspects. . . .
>
> Such an abstraction of the nature of man is not altogether new. The Reformation called attention to the priesthood of all men in contrast to the concretistic classification of certain men only as priests. The democratic political inventions of the eighteenth and nineteenth centuries hinged on the notion of the inherent rulership of all men in contrast to the older notion of a concrete class of rulers. In a similar fashion, we may replace the concretistic notion of scientists being apart from nonscientists and, like the reformists who insisted that every man is his own priest, propose that every man is, in his own particular way, a scientist.[9]

Once we accept the postulate of man-the-scientist, we have to see his first step in the creative loop as an act of abduction. And abduction, to be carried intelligently, demands some knowledge of epistemology and some practice of epistemics. These, in turn, belong to philosophy as we mean it in this volume.

This kind of philosophy has its place in all human enterprises, in the life of the individual, of the family, of the group, of the nation, of the whole of humankind. Wendell Johnson saw the future of humankind in a very optimistic manner. The last chapter of his *People in Quandaries* is titled "The Urgency of *Paradise,*" meaning that heaven on earth is within reach, if we only knew the art of designing it.[10] To design a "heaven" that we can build on our planet—what a challenge to the philosophers of today!

## NOTES

1. The energy-slave notion is taken from Buckminster Fuller's translation of Sir William Ramsay's "energy helots," or equivalents of man's output in electrochemical units. See John McHale, *The Future of the Future* (New York: Braziller, 1969), p. 210.
2. Time-binding is the main message of Korzybski's first book, *Manhood of Humanity,* originally published in 1921 (2d ed., Lakeville, Conn.: Institute of General Semantics, 1950).
3. Kenneth Boulding, "The Emerging Superculture," in Baier and Rasher, eds., *Values and the Future* (New York: The Free Press, 1969), p. 340.
4. See N. R. Hanson, *Patterns of Discovery* (New York: Cambridge University Press, 1958), p. 85.
5. The spiral advance of mankind by transmission and innovation of thought processes is illustrated in *Manhood of Humanity, op. cit.,* pp. 232-234.
6. J. Samuel Bois, *Breeds of Men* (New York: Harper & Row, 1970), pp. 127-153, 162-165.
7. Cassius Jackson Keyser, "Korzybski's Concept of Man," in *Manhood of Humanity,* 2d ed., *op. cit.,* p. 295.
8. Gaston Bachelard, *The Philosophy of No,* trans. G. C. Waterston (New York: Orion, 1970).
9. George A. Kelly, *The Psychology of Personal Constructs* (New York: Norton, 1955), p. 4.
10. Wendell Johnson, *People in Quandaries* (New York: Harper, 1946), p. 481.



# 2. The Old and the New

BILL had made up his mind to study the Great Books. In vain did I try to dissuade him. He was not going to give in to my views. In fact, Bill never gives in easily. He does not like to be told; he has to find out by himself.

So, he bought the whole set.

About a month later he told me: "How much would you give me for a fine set of books? I have one that I am ready to sell at a bargain price."

"What happened?" I asked. "You did not have time to read them all within a month."

"Indeed not," answered Bill. "I read three of them from cover to cover, and I glanced through a few others. It was a great discovery."

"A great discovery? What do you mean?"

"I discovered that most of the authors are out of date, like Alexander Graham Bell's telephone, Ford's Model T, or the Wright brothers' biplane. What was known in their days was a small fraction of what is known today. They built elaborate philosophic systems with very few scientific facts. I admire their brain capacity, but I don't see why we should copy their ideas. I'd rather start from where we are today. I want to study the scientists and the philosophers of my generations."

Bill had really discovered something. You cannot compare scientists and philosophers as if they had all lived at the same time and under the same conditions. Mankind is not a group of people that remain unchanged and unchanging as they move forward in the corridors of time. If you compare Plato with Bergson, Aristotle with Whitehead, or Newton with Einstein, you force into competition men who did not have the same factual knowledge at their disposal.

For instance, Alfred North Whitehead lived most of his life within our present century. He had a broad culture: he was able to read Latin and Greek in the original texts and probably was conversant with French and German. He spent many years in three famous universities of the English-speaking world: Cambridge and London universities in England and Harvard University in the United States. He kept abreast of the scientific advances that were made on all fronts. He took into account the discoveries and the theories of his time; he saw them against the background of the history of our Western culture.

HOW DIFFERENT were the intellectual resources available to Aristotle when he studied mathematics and philosophy in the Academy of Plato and when he directed his own school, the Lyceum. The scientific heritage that he received from previous generations was practically nil; the theories of his predecessors in philosophy had not yet been tested by generations of thinkers and researchers. As a scientist, he was practically without equipment.

> He was compelled to fix time without a watch, to compare degrees of heat without a thermometer, to observe the heavens without a telescope and the weather without a barometer. . . . Of all our mathematical, optical, and physical instruments he possessed only the rule and the compass, together with the most imperfect substitutes for some few others. Chemical analysis, correct measurement and weights, and a thorough application of mathematics to physics were unknown. The attractive force of matter; the law of gravitation; electrical phenomena; the conditions of chemical combination; pressure of air and its effects; the nature of light, heat, combustion; etc.—in short, all the facts on which the physical theories of modern science are based were wholly, or almost wholly, undiscovered.[1]

In the days of Aristotle, and for many centuries afterwards, great discoveries were few and far between; radical changes in thinking methods did not take place for generations.

Today, it is different. "Nearly everything that is known now was not in any book when most of us went to school," said Robert Oppenheimer at the International Press Institute in Washington in April 1958.[2] In the field of thinking methods, it is almost a free-for-all. Scientists feel that they have to take over from logicians and philosophers. Listen, for instance, to an American Nobel prize winner, professor emeritus of physics at Harvard: "I can . . . no longer feel the interest in some of the analysis of symbolic logic that I formerly did. In fact, the whole enterprise of logic appears in a somewhat unconventional light, which many logicians will doubtless find heretical."[3]

SO, MY FRIEND Bill was not so far wrong, after all. The classical great books are wonderful for a man who wants to study the history of Western culture from the Greek philosophers to the present day. But they present a real danger to whomever forgets that the writings of Plato, Aristotle, Thomas Aquinas, Spinozo, Kant, and all the others are obsolescent, both as to contents and as to method.

Rudolph Jordan puts it this way:

> No one will doubt the superb beauty and the utterly gratifying proportions of the Parthenon temple in Athens. Yet nobody should be pleased with the unfortunate effect of this beauty, which has put imitation temple fronts on our public buildings everywhere, in the most ugly and incongruous manner. Similarly, the ideas and concepts of Greek philosophy, and of Plato and Aristotle in particular, are great and astonishing works of art and inspiring achievements of the human intellect, commanding our reverence and admiration; nevertheless, they are, for the most part, completely out of date. . . . Aristotle's conclusions are in many instances as obsolete as the Greek gable on the New York Stock Exchange.[4]

I read somewhere a theory by a French author that struck me as very useful in this matter. It gave me an insight that marked a turning point in my explorations. Since then, I have recognized the same theory expressed in different terms in books where I had failed to see it before. But the key term used by the French writer has remained for me the most significant in summing up the whole idea.

The writer talked about the *historicity* of man. What the term meant to me was that *man's history is an integral part of what man is.* At different dates of history and in different places on the planet, men have a different historicity. That makes them men of a different kind.

Let us turn the whole idea around and say: a man without a history does not exist. From the very beginning of fetal life, every individual grows in a particular physiological, psychological, familial, social, and cultural environment. To grow in that manner is an "essential" part of being human. The old concept of traditional philosophy that describes man as a rational animal—without ancestry, without environment, without the date of his appearance on the calendar of his culture—is a dried up fiction that is as dead as the flower you pressed years ago between the pages of a book. It is without its color, without its perfume, without the qualities that were integral parts of its functioning as a flower.

Another way of speaking of humankind as an historical process is to call it the *human enterprise.* The word *enterprise* conveys the feeling of something that is going on, of a situation that changes by the activity of those who are part of it. There are various aspects of this enterprise. We may speak of its technological aspects from, say, the invention of the wheel to the use of ball bearings, rubber tires, or the propeller of the airplane. There is also its political aspect from, say, the tribe to the nation and to the United Nations. The religious aspect would draw our attention to the sorcerer, to the priest, to the evangelist, or to the humanist who tells the world that there is no need of such a thing as revelation. Its scientific aspect shows us the men who have been concerned with the how and the why of what is going on—men like Pythagoras who saw number as the essential factor in everything, and men like the physicists of today who tell us of matter and antimatter clashing in the recesses of the sky. As the human enterprise proceeds, its aspects change.

These changes are not mere changes in appearance, as the Ortega Mountains across the lake from my house passed from green to blue, to gray, or to pink, depending on the condition of the atmosphere and the position of the sun. They are changes from within the process itself, like the changes in the color of the pomegranates that were bending the branches of the tree in front of my window. In the spring they were green; later they showed brownish spots and streaks of red; in the fall they were red all over, and they burst open from the pressure of the ruby grains within.

SPEAKING of the changes that take place as man transforms himself by his own activity, some writers use even stronger analogies. They compare them with the spectacular changes brought about in plants and animals by the science and art of the geneticists.

> There is consensus today that although we are the offspring of the past, *we are mutants as well.* We are living in a time of general shift more fundamental than any since agriculture and herding displaced food gathering and hunting as the habit of human existence. Not only the outer forms of living are being remodeled: our standards of value, thought, and conduct, our criteria of judgment, all our yardsticks are altering as well. The very canons of our culture are changing. [*Italics added.*] [5]

These mutations are following one another at an increasingly faster rate. Centuries ago, generation after generation could live under a political system that was practically unchanging, in a technological world where tools remained the same, within a philosophy of life that was stabilized. A revolution in logic was unthinkable. Gradually the feeling grew that logic, as known and practiced, was something just as permanent as human "nature" itself. It could be improved in details on the fringe, but the core of it would remain forever what the great discoverers of man—Socrates, Plato, Aristotle, and the like—found it to be centuries ago.

In our century, the rate of obsolescence has increased to the point that within my own lifetime I have had to adapt myself to radical changes—not only in scientific information, but also in methods of thinking about myself and about the world around me. The logic of Aristotle is obsolete; the common-sense logic imbedded in our language is obsolete too. New theories are like airplanes coming out of the assembly line: they are obsolete the day they are put into large-scale production. The most permanent characteristic of our life is that permanence is nowhere to be found. Man's activity is an unceasing creation.

Does this mean that each new model starts from scratch, ignoring the advances of the earlier ones? Of course not. Does it mean that the changes are always minor and do not alter the basic structure of the system? Neither. Minor changes are extremely frequent, and we accept them as a matter of course. Major changes are not so easy to recognize and to accept; they require so many readjustments of our thoughts, feelings, and habits that we would rather ignore them.

I HAVE FOUND it less painful to accept changes and to readjust myself to them by viewing science and logic as historical processes. Science becomes *the way professional scientists, when they act as scientists, do things in my days.* Logic becomes *the way creative thinkers, in the act of creation, manage their thoughts and feelings in my days.* I do not compare their "objective" value systems with others that are generations away. I would rather study the role each of them played in its days.

When the Greek scientists and philosophers came upon the scene, where were science and logic? Will Durant tells us:

> Earlier civilizations than the Greek had made attempts at science; but, so far as we can catch their thought through their still obscure cuneiform and hieroglyphic script, their science was indistinguishable from theology. That is to say, these pre-Hellenic peoples explained every obscure operation in nature by some supernatural agency; everywhere there were gods.[6]

Evidently their "theology" was what we now call *mythology.* Natural history, as we know it, did not exist. Rivers, mountains, animals, gods, and men went into the strangest combinations of intermarriage and interaction. The centaur, the minotaur, the sphinx were accepted as possibilities. In *Caesar and Cleopatra,* George Bernard Shaw brought that period back to life.

> CLEOPATRA [*to Caesar*]. Did you happen to see a white cat anywhere?
>
> CAESAR. Have you lost one?
>
> CLEOPATRA. Yes: the sacred white cat: is it not dreadful? I brought him here to sacrifice to the Sphinx; but when we got a little way from the city a black cat called him, and he jumped from my arms and ran away to it. Do you think that the black cat can have been my great-great-great-grandmother?
>
> CAESAR. Your great-great-great-grandmother! Well, why not? Nothing would surprise me on this night of nights.
>
> CLEOPATRA. I think it must have been. My great-grandmother's great-grandmother was a black kitten of the sacred white cat; and the river Nile made her his seventh wife. That is why my hair is so wavy. . . . My blood is made with Nile water.

Later, in the same act:

> CLEOPATRA. Tell me: do you think that the Romans have any sorcerers who could take us away from the Sphinx by magic?

CAESAR. Why? Are you afraid of the Romans?

CLEOPATRA [*very seriously*]. Oh, they would eat us if they caught us. They are barbarians. Their chief is called Julius Caesar. His father was a tiger and his mother was a burning mountain.[7]

It is difficult for us to realize that there was a time when the human mind was functioning that way. But we have good reasons to believe that it was. "The Greek intellect itself was undisciplined and chaotic till the ruthless formulas of Aristotle provided a ready method for the test and correction of thought."[8]

WHAT were those "ruthless formulas" to which Durant is referring? They are none else but the basic principles of classical logic: the principle of identity and the principle of the excluded middle. If Cleopatra had known and practiced those principles, she would have known that a cat is a cat and nothing else, a river is a river, a mountain is a mountain, and so on. In technical terms: A is A and not non-A.

The principle of identity was a great advance, indeed. I see it as one of those achievements of the human intellect that command our reverence and admiration. When I hear semanticians who heap scorn upon Aristotle and his principle of identity because their own master, Korzybski, wrote, "Identity is never found in this world,"[9] I wonder if they have taken the trouble to index the word *identity*—that is, to consider the specific meaning and context of the word. The identity that Aristotle revealed to the world brought order out of chaos; it introduced the necessary principle of classification—of distinguishing between mineral, vegetable, and animal and between the various species thereof. But, in the days of Aristotle, nobody was prepared to see the cosmos as a space-time process where no point-event ever repeats itself. And so, the identity that Korzybski claims is never found in this world is not the identity that Aristotle talked about, no more than the atom of Bohr is the atom of Democritus.

I see no harm in accepting the principle of identity, provided we accept its limitations at the same time. It gives a rough-and-ready picture of the objective world, and it is sufficient for many practical purposes. I wrote elsewhere that our units of discourse—our "concepts," as we usually call them—are fuzzy at the edges. I am not taking this back. But

I want to remind you that, although it is often difficult to determine where one concept ends and the next one begins, just as it is difficult to draw a sharp line between the water and the beach, it remains that one concept is not another, no more than the water of the sea is the sand of the shore. Water is water, and sand is sand. At the level of common sense, it works.

The trouble is that common sense is not enough to manage what man has to deal with; it is not sufficient to ward off epidemics, to pilot a plane, or to run a business. It takes something more. It takes the knowledge and the skill of science in action. Human relations and organizations have complexities that are beyond the simple, direct management of common sense. There, also, we need the knowledge and the skill that the most up-to-date science can provide. The wisdom of the Great Yesterdays is in need of revision.

## NOTES

1. Will Durant, *The Story of Philosophy,* rev. ed. (New York: Simon and Schuster, 1933), p. 64.
2. Robert Oppenheimer, "The Tree of Knowledge," *Harper's Magazine,* October 1958, p. 56.
3. P. W. Bridgman, *The Way Things Are* (Cambridge, Mass.: Harvard University Press, 1956), p. 9.
4. Rudolph Jordan, *The New Perspective* (Chicago, Ill.: University of Chicago Press, 1951), p. 218.
5. Lynn White, Jr., *Frontiers of Knowledge in the Study of Man* (New York: Harper, 1956), p. 302.
6. Durant, *op. cit.,* p. 72.
7. George Bernard Shaw, *Seven Plays* (New York: Dodd, Mead, 1958), pp. 376–377.
8. Durant, *op. cit.,* p. 67.
9. Alfred Korzybski, *Science and Sanity,* 3d ed. (Lakeville, Conn.: The International Non-Aristotelian Library Publishing Company, 1948), p. 93.

# 3. Time as a Dimension

TO REVISE the wisdom of the Great Yesterdays, we have to become aware of time as a dimension—as an "essential" characteristic—of our semantic reactions. Once this awareness becomes habitual, we see the world and ourselves as on-going processes. Each process has its own rate of acceleration or deceleration, its own rhythm, its own pulsation, its own space-time curvature in a space-time cosmos.

It is relatively easy to sense the time dimension when we deal with processes that keep moving under our eyes, like the smoke of a cigarette, the clouds in the sky, the stream down the mountain. When I try to "time-dimensionalize" things that change very slowly, it becomes much more difficult. For instance, I admit—on logical grounds—that the statement of Chi-tsang, quoted by R. G. H. Siu, is quite acceptable: "The table of this actual moment is no longer the table of the preceding moment."[1] But, try as I may, I cannot get the feel of it. It calls for a fine discrimination that is beyond my sensory capacity.

Apart from fast-moving things like the smoke of a cigarette and solid stable things like the table, there are things that grow: vegetables, shrubs, and trees. As I walk through a flower garden, I can get the feel of things stretching and expanding in the time dimension, each one at its own speed, each one in the direction suited to its nature. It is from such experiences that I got the idea of biological models of thinking.

If we pass from things—permanent, changing slowly or fast—to activities, the time aspect of the phenomenon becomes an extremely important one. Time is a dimension of which we have more control than I suspected years ago. We can make it long or short, accelerate its unfolding or slow it down. When we do so, we expand or contract the process almost at will.

HERE is an example of what I mean. A few years ago I received a letter from a friend, in which he said: "I have been studying [your book] *Explorations in Awareness* intensively over the last couple of months. I see that somehow you have sneaked in a lot of new things that were not there the first time I read it."

Reading a book is an activity, a process, a transaction. It has an optimum time dimension for each individual, depending on his previous knowledge of the subject, his degree of interest, his capacity to assimilate new ideas, etc. If the transaction is too short in time, it is just a contact, not a transaction. It is like a tree that I cut down before it has time to grow and produce fruit. It is a stunted activity. It is like a jump that I stop in mid-air. It is a melody of which I play only the first two or three notes.

If I let the process develop in time, if I give it intensive care, lo and behold, the transaction unfolds and bears fruit. It brings out ideas, insights, "a lot of new things that were not there the first time" the book was read. In a sense, we may say that they were there, like seeds ready to sprout. In another sense, we could say that they were *not* there: the full-grown plant does not show its size and its color in the seed. A transaction is a phenomenon of assimilation, and assimilation takes time.

Here is another example. Last summer I attended one session of a workshop on art given at a youth camp. The instructor told us to look closely and at length at anything within our reach. I took a leaf from a branch that was dangling by my head.

Looking at a leaf is a transaction. If it is too short, we get little out of it that is really new to us. We stunt the transaction; it produces no fruit. If it is long enough to start operating, it unfolds itself and enriches our store of experiences. I can still remember that leaf: its finely veined structure, like a mosaic where no two pieces have exactly the same shape or the same shade; its well-engineered ribs that supported the surface stretched between them and supplied it with moisture through built-in channels; the shine of the upper part and the soft pastel underneath; the scalloped hem all around. Were those marvels there before I took a good long look? Yes, without a doubt, they were in the leaf, but they had not emerged in the transaction until I gave them time to appear. My world is made of such transactions.

Where were the "new" things before the reader discovered them? Where were the fine details of the leaf before I saw them? Before the reader discovered them, the previously unseen ideas simply did not exist for him. Before I saw the details of the leaf, they did not exist for me. After I "discovered" them, I inferred that they had been there all along, and my inference is a plausible one. But a thing does not exist in my world until I cause it to emerge in a transaction. My world grows as my transactions grow and multiply.

WHEN I SAY that the world is there and I am here, I am looking at a still picture of what has happened a moment ago; I am not describing what is going on now. The interval between the event and the picture is short, very short indeed. But I cannot bridge that interval. I cannot ignore time as an element of the world I build for myself as I transact with the cosmos.

It is well over a hundred years ago that the astronomer Bessel discovered reaction time, the time that it takes for the nerve impulse to travel from the eye to the hand. It is taken into account today when people are tested for occupations that demand quick reflexes, such as driving an automobile or piloting a plane. People differ in this respect: some react more quickly than others.

The practical point is that *everybody takes some time to react* to any stimulus. The nerve impulse has a slow speed compared to other speeds with which we are familiar. The common saying, "quick as thought," is as false a common-sense saying as can be. If we say that the average speed of the nerve impulse is 155 miles per hour, it may not make a clear impression, because we feel that at such a speed it won't take long to course through our body and our brain. To help our conceptualization, we could use the example by which Dr. Fritz Kahn magnifies the phenomenon in his book, *Man in Structure and Function.*

> If a giant were stretched over the earth so that his feet lay in the water at the southern tip of South America while his head lay in Alaska, the bite of a shark that had bit his toe on Monday morn-

> ing would first be perceived by his brain on Wednesday evening. And should he now wish to withdraw his foot "rapidly" from the water, his desire would avail him little, for it would take until the end of the week before the volitional impulse would have reached his foot. After having withdrawn his foot, he would still have a feeling on Sunday, Monday, and Tuesday that his foot was in the water and was being bitten, for it would take so long before he would receive the news that the foot had been drawn on dry land.[2]

The magnification of the microscope helps us see things that our naked eye cannot distinguish. I feel that this illustration works like a microscope. It enlarges the time dimension of simple reflexes to the point that we conceptualize it.

The time dimension can be ignored no more than can the germs revealed by the microscope. We cannot eliminate time within ourselves, however good we might be at reducing it with our modern inventions.

IF IT TAKES a measurable time interval for a simple reflex to take place, how long do you think it will take for a full semantic reaction to run its course? How long will it take us to understand something new, to make sense of a statement that sounds unusual, to assimilate a complex theory, to read and profit by a book that introduces a great many unfamiliar notions?

All these are transactions, just like the reflex of the giant stretched on the globe from Cape Horn to Alaska. They are transactions that require more than a straight message from our eye to our brain. They require the activation of a complex set of relays among the cells of our brain. This activation is not easy, because it may go against well-established circuits that have been going on, perhaps, for years, and that are actually going on at the time we are attempting to change to a new semantic reaction. All this takes time and skill. If you want to cross Times Square when it is practically empty in the very early morning, you may do it quite fast. But if you try to cross it in heavy traffic when cars are speeding and the crowd is milling about, it will take you longer. The more learned you are, the more traffic is on the move in your brain. You have established traffic laws that no newcomer can disregard without running the risk of being crushed.

This traffic in the brain—and all over the organism—has a rhythm of its own. It stops and goes at preset intervals, just as traffic is controlled in a network of busy streets by a system of green and red lights. Scientists tell us that our nerve cells are responsive at times and give us the green light; they are refractory at other times and stop the traffic for a while. When a familiar impulse—an idea, a theory, a logical sequence, or what have you—enters the pulsating network of brain traffic, its passage may be facilitated if we stop all traffic to let it pass. It will rush unopposed like an ambulance or a fire truck. But let a stranger attempt to cut across the downtown traffic, and he won't find the going easy. He will have to slow down, to stop at red lights, to comply with one-way directions that take him away from his objective. If you have ever had to find a place to park your car in the business section of a strange city at the height of traffic, you understand what I mean. Similarly, if you want to stop a discussion at a point that you consider vital, you may discover that the traffic rules in the brain of your fellow discussant will keep you going through a maze of one-way streets, no-parking zones, and forced circulation arteries that will eventually take you far from where you meant to go.

The same thing often happens in our brain when we try to assimilate a new idea or when we want to make sense of a complex situation. The faster we want to do it, the more difficult it becomes. The traffic rules or our thinking habits slow down, divert, or block the progress of a new idea. It does not make sense, because it fails to conform to the directional rhythm of our semantic reactions.

ORIGINAL THINKING takes time; routine thinking is speedy. In our culture, where speed is often taken as a sign and a measure of progress, we have a tendency to curb original thinking that is slow and to favor routine thinking that is fast. We say "time is money," and we save it as misers who won't invest it in amounts necessary to bring returns later.

You, who are now reading these lines, may be one of those voracious readers who look here and there for *new* ideas, for original thinking on the part of writers that you bring before your judgment seat. I was such a reader not so long ago, passing judgments with a light heart. Let us review together some of our experiences. I shall describe to you one of mine. Dig out of your memory whatever resembles my own performance.

Once I was reading a book entitled *Existence,* edited by Rollo May.[3] The book deals with psychotherapy as practiced by analysts with an existential outlook. Little did I suspect that the authors would quote the works of Professor Gaston Bachelard, the French scientist-philosopher, whom I never classed among existentialists. But Bachelard was quoted more than once. A reference to his *La Psychanalyse du Feu,* which happened to be right there on my bookshelves, aroused my curiosity. I stopped my reading of *Existence,* took Bachelard's small volume off the shelf, and read again the pages to which the author referred. To my great surprise, the passages did not mean what I thought they meant when I read them years ago. Stimulated as I was now by a new interpretation, I was reading a different Bachelard—probably because my own approach was different. The transaction between the book and me was a *new* phenomenon. The fruits of the transaction were as different from the previous ones as a peach is from a pear.

As I was writing the preceding paragraph, I stopped in the middle of it and read over again the few pages from Bachelard's book that are pertinent to Rollo May's reference. The "new" interpretation is confirmed, this time with a wealth of ideas, feelings, and memories that cluster around it.

In the light of the analogy of the traffic on the network of my brain cells, I could describe my reading of *La Psychanalyse du Feu* in three stages:

1. The first reading was rapid and easy, and Bachelard's notions came in and out of my brain according to my own traffic rules, my own well-established semantic reactions. It was agreeable to hear a clever man enunciate, in a beautiful French, views that I accepted readily. But it did not change my thinking; it did not enrich my understanding.
2. In the second reading, prompted by Rollo May's quotation, I let Bachelard's and May's notions travel leisurely, at their own pace, through the network of my brain circuits. I was giving the new ideas the reception that we give to important personages who visit our town once in a great while. We give them an escort of police motorcycles that leads them through at the pace they choose. The experience was a definite break in the routine of my thinking-feeling life.
3. The third reading, just now, is as rapid and easy as the first one, with

the difference that it is richer in connotations and implications. It fires chain reactions right and left, up and down. It gives me a feeling of enrichment, of expanding growth.

COULD any of this take place in a first passing contact with Professor Bachelard's statements? Evidently not. I may be a bit slow, but no man is so bright as to assimilate, without any time lag, a theory that is entirely new to him. It would be magic if we could entirely eliminate time as a dimension of all semantic reactions. I don't believe in magic, and I hope you don't.

## NOTES

1. R. G. H. Siu, *The Tao of Science* (New York: Wiley, 1957), p. 21.
2. Fritz Kahn, *Man in Structure and Function* (New York: Knopf, 1943), p. 471.
3. Rollo May, *Existence* (New York: Basic Books, 1958).

# 4. Constructs for a Purpose

YOU RECEIVE a machine that was not assembled at the factory. The parts are packed in a box. There is a booklet that describes every part and gives it a number. All you have to do is read the description, recognize the parts one by one, assemble them according to the instructions, and you have a machine built, ready for operation.

The description of the parts and the instructions on how to put them together constitute the verbal counterpart of the structure of the machine. This structure is not the sum of the parts. It is something prior to their existence, since it has determined their shape and their number. It adds to their physical existence a function of interdependence and interaction. It is the nonmaterial pattern that makes the machine an operating whole.

A human brain created this structure. The inventor introduced into the cosmic process a new organized whole, a center of negentropy, which nature, left to itself, would not have created in millions of years, if ever. It is the work of a man, a time-binder, who put together in a system of his own design the accumulated experiences of previous generations and blended them with his own. This man-made structure is a *construct for a purpose.*

All our plans may be seen as constructs for a purpose. So are our scientific experiments; so are our theories. In fact, we may see constructs for a purpose in all the energy patterns that preside over life phenomena.

Some are not designed by men. They lie hidden in the programming inserted in the genes of plants and animals.

The seed bursts open when conditions are right. It seeks and collects the proper chemicals that lie within its reach and transforms them into a new substance. The purpose that guides this action lies somewhere within a larger space-time unit that contains many similar plants. It is the survival nisus of the species to which they belong. The plant species insures its own continuance through the expendable individual it has stirred into action.

In animals, the constructs require a more active participation of the individual member of the species. The sea otter grabs a stone and uses it to crack open the oyster shell that contains the food he wants to eat. The gray whale leaves the frigid milieu of the arctic sea for the tepid waters of the Gulf of California to deliver its young. Canadian geese fly north when the time of nesting nears.

In some cases, there is a bit of fabricating added to the choice of the proper environment, as when birds pick twigs, straw, and softer material to build their nests; when beavers build dams and huts; when bees make rows of hexagonal cells in well-engineered combs. In cases closer to man, there may even be something like a creative insight, as when Sultan, the chimpanzee, discovers that the two short bamboo sticks with which he is playing may become, when inserted into each other by mere chance, the long stick he needs to reach the banana he could not get before.

MAN, the tool user and tool maker, went through these stages of development, and he eventually entered his own world of conscious planning, invention, and technology. When he used stones to crack nuts, they did not have to have any particular shape; their hardness was sufficient. When he wanted to use them to skin an animal, they had to have a sharp edge or they had to lend themselves to being chipped. He learned to seek natural products he could shape or transform to suit his purposes. That meant assessing the characteristics of the original material and fabricating it as a means to an end. The sequence of discovery followed by fabrication varied in length at different stages of his technology: in the case of the stone knife, it was short—finding the suitable stone and chipping it to a sharp edge; in the case of an electric carving knife, it is much longer—extracting metal from ore, blending it with carbon to become steel, shaping, annealing, sharpening, and connecting the fabricated object to a motor that is itself the end product of a long process, etc. The longer the sequence, the more advanced the technology.

Our scientific experiments are also constructs for a purpose. First, we invent a theory: "If so, then so. . . ." The "if so" part is a vision of possibilities, emerging from whatever experience we have accumulated in a particular field. The "then so" part translates into a program of action the vision that has taken shape. The experiment is carried out according to this program of action, and the results obtained are evaluated against the same program.

We devise experiments as we invent recipes. The general idea is to decide what performance is most likely to achieve a certain purpose. When the recipe has worked consistently well many times and under diverse conditions, we say that it demonstrates a "law of nature." The by-product of the operation is the knowledge of what does what under what conditions. We call this *science.* In a sense, every planned activity may be seen as the working of a recipe. As I accumulate experiences and sum them up in formulations, implicit or explicit, I increase my stock of recipes for living.

Each recipe determines what ingredients will be taken and in what proportion. It says how they will be combined, at what temperature, in what time sequence, and how the dish so prepared will be served. The recipe is a mental construct; it contains directives as to how to manage the energies locked in the substances selected for use. These energies are brought to a higher order of synergy by the imponderable action of the construct itself. From the world as it exists, we make a new unit, which we put back into the world.

AS SCIENCE and technology advance, we become less and less subservient to the "natural" qualities of the elements we choose to employ. If a material is required that has to have qualities not found in nature, we now devise new formulas and we produce synthetics made expressly for our purposes. I understand that this was done in the case of the X-15 plane and in the case of the astronauts' spacecraft. Here, the purpose is the starting determinant. From it, the construct emerges, and from the construct a final product is created that never existed before and would probably never have existed in nature left to itself. By transforming elements already found in nature and later creating elements that serve his purposes, man has constructed a world of his own making.

If this has been more evident in recent years, it is not because it did not happen before. We have achieved it in so many fields and in such a gradual manner that we did not notice the growth of our creative power. It is only recently that, stimulated by the discoveries of geological and biological evolution, we have begun to observe the marvels of our cultural and technological evolution.

In music, for instance, our primitive ancestors had none but the sounds of the wind and the waves, the singing of the birds, and their own capacity to yell and cry as mental models of acoustic phenomena. How they started imitating these noises and transforming them into sounds we don't know. But, with a bit of imagination, we can easily surmise how many stages of creativity must have taken place between these natural sound elements and the symphonic orchestrations, the organ concerts, and the operas of today. Not only did men combine sounds already available; they created new sounds, invented instruments, devised musical notation, and built concert halls. We can fill our living room with high fidelity recordings made at different times and places by artists whose performances are perpetuated for countless generations anywhere on the planet.

Musical constructs have given birth to richer and more elaborate constructs. From these constructs have emerged more and more sophisticated materializations. This man-created environment has reacted on humankind itself: it made possible the appearance of musical geniuses, composers, and performers. The world of music would not exist had not men intervened to change and expand the course of natural events. The world of the arts is a man-made world.

This is true of the many "worlds" that rule our lives in this twentieth century: the worlds of technology, of politics, of economics, of scientific institutions, of organized religions, of education, etc. Many of these worlds just happened; they "growed like Topsy," as the popular saying goes, and we have become the playthings of forces we have turned loose, without realizing what we were doing to ourselves and to future generations.

It seems that the time has come to plan our planning. For this, we have to take a good look at ourselves and figure out how our mental constructs come into existence, how we can manage their production, and how we can learn from our previous successes and failures. We have to hoist ourselves to a higher level of observation and see what purposes, conscious or unconscious, we are actually pursuing, and how we invent constructs to serve them. To succeed in such a venture, we had better bring to bear upon our enterprise all that we have learned in recent generations on how men function, individually and in groups. We need a new wisdom, a new awareness, based on the information available today and adapted to the needs of the present situation. In previous generations it was called a "philosophy.," or "the art of the lovers of wisdom."

"We have all that in the Great Books," you may say, and you feel safe with the Syntopican at your elbow to give you a quick access to the accumulated wisdom of all great minds, from Socrates to Freud.

Please remember that every page of these books was written in light of the information available at the time it was composed, and the needs of humankind in those days were not those of our space age. The world of politics, for one, has changed considerably since the planet has become a village where everything of importance that happens is quickly known by word of mouth on the radio and TV networks. So have the worlds of technology, of economics, of education, and of scientific institutions. This whole human world has changed more radically in the last seventy-five years than it did in the centuries covered by the Great Books. Our mental constructs have to be brought to date, or we shall compound our troubles.

THE OVERALL combination of constructs that determine what we chose to do and the way we did it was the general philosophy of the culture at different epochs of history. At the time of the Chartres Cathedral, the philosophy was mostly religious and Christian in our Western world. When Michelangelo painted in the Sistine Chapel, the drama of man's creation, the redemption, and the last judgment, the philosophy was still religious, although expressed in a more fleshy style. If we take a long jump and look at what was done at the Montreal Expo, 1967, when some fifty nations gathered to dramatize "Man and His World," we realize that technology has taken over, and men are now living for this world and not for a final judgment to be met in the distant hereafter.

Where shall we find a philosophy—and why not risk the term, a *metaphysics*—that has a chance of being accepted by most of humankind today and that will serve the purposes of our survival in this most difficult period of history? The activity most acceptable to all men is probably the activity of scientists. It is relatively free from superstition and prejudices, and it has already produced startling results.

SO, IT MAY be worth our while to start with the "if so" suggested by science in its most advanced and successful form and draw from this postulate all the "then so's" we can infer with plausibility. The starting "if so," or general postulate, could be reduced to two statements:

1. The whole cosmos may be viewed as a process in evolution.
2. Our mental constructs are not pictures of an "objective reality" but schemes of how we can relate ourselves to a WIGO (What Is Going On) that we know only in part.

Evolution involves the unpredicted appearance of what did not exist before. Once a new phenomenon has happened, you may look for its causes, if your habits of thinking are of the cause-effect type. But if you accept evolution as a postulate, you can do away with these habits. There are certain simple situations where they still apply, as the Euclidian geometry applies in drawing the plans of a house, but you cannot extend them to all situations. When a cause-effect explanation sounds adequate, it is only because we can manage reasonably well with a rough approximation. This involves, of course, a certain amount of guessing, of neglecting details and precisions that we feel are not relevant to our purpose of the moment. In modern scientific thinking, we state the range within which our guessing is likely to fall. For instance, we say in weather forecasting that there is a 70 percent chance of rain, snow, or what not. Even if rain or snow does not fall as foreseen, we are not upset; we know that the chance remains for the actual event occasionally to fall outside the estimated range.

The causal link between situation *A* (the antecedent) and situation *B* (the consequent) is entirely of our own invention. So is the probability range that we estimate. When events occur within that range, they would imagine in the old days that they had discovered a "law of nature." Today, we stop short of any such conclusion. We content ourselves with a statement like the following: "Until now, and within the limitations of my capacity to observe, situation *B* emerged out of situation *A*." If you maintain that situation *B* was potentially in situation *A*, you are merely inventing a new phrase to rationalize your previous attitude that assumed a causal linkage.

WITH THE EVOLUTION postulate, you need not assume such a linkage in the phenomenal world. You witness a sequence of happenings, most of which fall within your range of expectation, and some of which—you don't know exactly how many and which ones—fall outside that range. Here is a story to illustrate this. In 1965, Adlai Stevenson went back to the predictions President Franklin D. Roosevelt's technical advisors had made in 1938 to help him plan government policies. They had missed, among other things, radar, rocketry, nuclear energy, antibiotics, and the electronic computer. All of these, as you know, were to happen within a few years.

Not only cause and effect, but trends and forecasts have to go by the board, if we are going to profit by such experiences. Then, and then only, shall we accept fully the evolution postulate. All through recorded history, and long before history, in the remains of ancient cultures studied by archeologists, in the fossils unearthed by paleontologists, and in the strata of geology, things have happened out of nothing that announced them. We can say that they emerged, that they were created, or whatever else we can dream up as a statement. At a time, they were in existence; at an earlier time, they were not. Why? How? We really don't know!

The evolution postulate applies not only to stellar, geological, and biological evolution, but also to what is now recognized as "cultural" evolution. We could also apply it to the self-renewals that take place in the life of certain individuals. When you take time to ponder over that and draw as many plausible inferences as you can, your outlook on life undergoes a cosmic change. And your philosophy cannot be what it was before.

The second postulate is a total denial of objectivity as commonly understood. It does away with the construct of "truth," which is proposed in the solemnity of our courts of law in the standard formula: "The truth, the whole truth, and nothing but the truth."

Here again, it is a matter of approximation. It applies not only to the witnessing of automobile accidents or to police raids, but also to the whole of our experience of being-in-the-world. We may continue saying that a statement is true, when we simply mean that it is as accurate as needed for a particular purpose.

The belief in an objective reality is an extremely subtle component of our semantic makeup. Even in the most sophisticated practice of the art of awareness, it remains lurking behind our most self-congratulating statements. We are proud of having at last achieved the high degree of awareness that we think reveals to us *how we actually function.* Closer and closer we get to what existentialist psychologists call *authenticity.* Behind the screen of self-deceptive conditionings, rationalizations, and emotional resistances, we assume that we shall eventually discover a clearly outlined self, authentic, genuine, *real.* Some consultants see themselves as experts in the art of bringing out existential authenticity, and they mean well with all the sincerity of their professional souls. Lewis Carroll had a name for that search; he called it the "hunting of the snark."

TO ACCEPT the postulate of nonobjectivity involves a complete reversal of our common-sense orientation. By common sense, here, I mean the educated attitude of people who want to be genuinely "scientific" in their approach to their life problems. With this postulate, we go one step further into the world of the most recent epistemology. Instead of looking at a world out there and drawing a sketch of it as exact as the new findings of researchers make it possible, we look at ourselves and we derive from our own needs and limitations the categories that we project upon the outside world, including ourselves as another object to study and understand. If, as Niels Bohr used to say, the physics of today concerns itself, not with nature, but with what we *say* about nature, *a fortiori* will up-to-date philosophy concern itself, not with nature, but with what we say, feel, do, think, etc., in order to deal effectively with the world in which we live? Our philosophy will be an *organic* philosophy, as Lancelot L. Whyte put it[1]—meaning by this a philosophy made of constructs for purposes consistent with our organismic functioning. After all, there might be some meaning in the old saying: "Man is the measure of everything." Why not translate it as follows: "The world men talk about is a projection of men themselves as they live, toil, and grope in different places on this earth and at different periods of history."

The eventual conclusion to be derived from this second postulate is that the present philosophical essay is my own "thing," as the young people put it today. It is not philosophy; it is *a* philosophy, just as Dante's *Commedia* was his own version of the world as he saw it at the dawn of the Renaissance, or—to take a less glamorous analogy—just as Grandma Moses' paintings were her version of the world in which she lived.

Nobody has to accept my philosophy as is, and I hope nobody will think I expect him to do so. What would rather please me would be to find, now and in years to come, some venturesome souls who would take a chance and experiment with these postulates and their implications. They may find it a gratifying experience. As they grow through it, they will undoubtedly enrich it and then pass it on to another generation, who will, in their turn, make it a bit richer. In this way, cultural evolution will follow its course, bringing into existence new breeds of men.

WHETHER we are aware of it or not, we all philosophize in our own way. Some of us simply echo the philosophy they hear broadcast all around them—in books, magazines, newspapers, conversations, radio and television programs. They may hear the same themes when they take courses in colleges and universities. A few do their own pioneering, advancing into the world of the unknown at their own risk, and trying to make sense of experiences that are different. To these I say: let us join together in a philosophizing game, setting up brand new constructs and tearing some down without hesitation, until we devise a few that seem better to serve our long-range purposes in this age of transition.

## NOTES

1. Lancelot L. Whyte, "Recover Values in a New Synthesis," in *Main Currents in Modern Thought*, 26, no. 1 (September-October 1969), 9.

# 5. Processes in Transaction

I AM THE CENTER of my world, as you are the center of yours. We walk side by side on the sidewalk, and we look around. We meet people coming and going; we see houses that stand in a row, cars that move swiftly on the street. I see these things from my own center, and you see them from your own. You are by my side and part of the surround of which I am conscious; I am outside your own center and part of the physical world you observe around you. Even when we are together in a limited space, our personal worlds do not coincide. Each one has its own center, and this center moves as we move.

In the time dimension, our worlds do not coincide either. You are in your early thirties and I am in my late seventies. The second World War is a faint memory from the early days of your conscious life; for me, it is like yesterday. I can easily see myself leaving my office to join the army, going through a month of training as officer cadet, entering a world of uniforms and ranks made important, eventually to merge myself in the higher bureaucracy of the National Defense Headquarters in the capital. Even the first World War, which for you belongs to history, remains as fresh in my memory as last year or the year before. It was in the morning of the long "today" that is my life, not so far from the late afternoon I am now enjoying. For you, the present years of the space age are within the morning of your adult life and are part of a personal "today" that stretches ahead in years you don't think of counting.

Both of us belong to a common wider world, that of our country, which is very much alive in the family of nations that compete with one another on the stage of history-in-the-making. In the time dimension, this American world took shape within the century-long Western domination over the rest of the planet. This began when the Greek civilization became world conscious when the power of Rome ruled the universe, spread itself technologically and economically on all continents, and it begins to sense the challenge of powers large and small that take shape in the amorphous masses of the rest of humankind. It emerged out of tribal life one hundred generations ago, and for the last fifty years there has been a debate among historians whether it is now reaching its decline or not. One thing seems certain, it is undergoing a tremendous crisis. It has engulfed the three generations of which I am aware—mine, that of your father, and yours. Will the generation of your young son see its rebirth? I don't know.

WHEN THE MEMBERS of our Western world began philosophizing, they applied to themselves the mental construct they had invented to deal with their environment. They had discovered a certain order and hierarchy in the world about them, and they called that order *Nature.* The totality of that nature was made of many specific natures, each one having its assigned place and function in the overall system. The whole universe was made of three layers resting on one another. At the bottom was the mineral kingdom of mere matter; next came the vegetal kingdom of plants, trees, flowers, and fruits; and on top was the animal kingdom of birds, fishes, and beasts. Above them all was the kingdom of man himself, half matter and half spirit, above which none but pure spirits and God were known to exist. The specific nature of man was the mysterious duality of a mind conscious of itself and a body full of instincts and passions.

That definition of human nature has held sway for 2,500 years. In the meantime, astronomy has passed from the earth-centered Ptolemaic system to the relativistic world of Einstein; the crude instruments of the alchemists have given place to the ion microscope, the atom smashers, and the isotope tracers of today; medicine has set aside the theory of humors and the practice of drastic purgings and bleedings, and it has replaced them with the advanced methods of modern laboratories and hospitals. While this is going on, the philosophy of the common man is still struggling with the body-mind problem. Some men in the street may not even suspect that such a problem exists. They take it for granted that we should think of ourselves as either subject to physical ailments, for which we go to a physician, or of mental diseases for which we get treatment from a psychiatrist or a psychologist.

IT IS HIGH TIME to discard that obsolete mental model, as old as the earth-centered model of the universe. We had better discard as well the recently contrived versions of it that claim to bring it up to date. The adjective *psychosomatic* is an example of such a version. It lumps together the Greek words *psyche* and *soma* in a neologism, confirming in its own way the age-long partition of man in two distinct elements, one of a spiritual and one of a material nature. Books are published and have a wide sale, apparently because they provide clever variations of the old theme without requiring any disturbing thinking about ourselves. Some contain valuable information, I admit, but none of them fits with the world outlook that the coming post-modern civilization demands. Here are some titles at random: *Man's Emerging Mind, The Naked Ape, The Ghost in the Machine.*

Some thinkers, who call themselves phenomenologists, have made a praiseworthy attempt to describe the objects they study in terms that are not committed to any particular theory. Pierre Teilhard de Chardin, the Jesuit paleontologist, does so when he entitles his main treatise *The Phenomenon of Man,* and his book surely deserves the popularity it has achieved in recent years. It remains, however, that he deals with *man* in abstract, with a "nature" in the old philosophical sense, with a class name and not with the live individuals who are covered anonymously by that class name. He fails to emphasize the uniqueness of the individual members of the *Homo sapiens* species. He does not take into account, except in a very few passages, the difference between the sexes, between children and adults, between adults and oldsters. He does not differentiate between cultural groups that have practically nothing in common in the way they live their human life.

Of course, you may say, we have to use class names if we want to talk at all. Class names are nouns, and no statement makes sense unless it includes a noun as subject of the verb. Agreed. And yet there might be some way to overcome the danger of putting an element of thingness in everything we talk about. I know of one attempt made years ago to dissociate class names from the concept of a "nature" that is the same in every case and in all significant details. Korzybski spoke of an "extensional definition" of man.

> By *extensional definition of man* Korzybski meant a mathematical representation of the whole of humankind, in time and space, from the first *Homo sapiens* to the baby born this very moment. He summed it up in a simple expression, derived from the mathematical language that meant so much to him. The expression is $\text{Smith}_1$.
>
> Smith stands for a proper name, like yours and mine. It reminds us that no individual answers to the common name *Man,* but has a distinctive one of his own, be it Robert, Pierre, Ivan, Chou, Juan, or Xenophon. The number attached to each name is unique for each individual, as if you witnessed an almost endless parade of all the Smiths who lived and are now living on our planet—man, woman, or child—different one from the other as to age, culture, occupation, place of abode, mental capacity, health, feelings, and ambitions. This helps us to visualize the human race in space-time, moving about all over the earth through prehistoric times and recorded history—from the primitive in his cave to the city dweller in his penthouse; from the demented in mental hospitals to the scientist in places of higher learning; from the beggar who stretches his hand for a pittance to the millionaire who signs checks of astronomical size; from the newborn who yells his first cry to the dying who breathes his last; from the underworld character to the nun in her cloister; from the leper to the winner of a beauty contest; from the soldier returning home in victory to the crippled victim of the Hiroshima blast. See them appearing and disappearing, milling about along the paths of history, all over the continents. Their crafts and their habits are changing as time goes on; their way of life differs from one place to another. The Smiths of today live differently from the Smiths prior to the Industrial Revolution; these, in turn, lived differently from the Smiths of the Middle Ages; and so on, back to the Smiths who hailed as geniuses the inventor of the wheel and the discoverer of fire making.[1]

We can keep this picture of $\text{Smith}_n$ in mind if, instead of the singular *man,* we use the plural *men,* implying, of course, the extreme variety and the individual uniqueness of men, women, children, oldsters, and babies all over the planet from the very beginning of our species to the present time and beyond.

WE COULD go a few steps higher in the ladder of abstraction and choose a class term that applies not only to men but also to other phenomena that have, like human beings, a characteristic of permanence for a span of years, a uniqueness, that singles them out, and a relentless change that makes them different from moment to moment. The term *process* is the one I am going to use. It is generally accepted in most sciences of today to designate an object of study without implying that it it a substance, a "nature," or a thing.

A process calls for an operational description, for a statement of what happens within it and in its immediate surround. The boundaries of a process are arbitrary, and its description has to remain an open-ended statement with an implicit *et cetera* attached, which means: "What I just said is not all that can be said about this."

This brings us to a description that, I think, can apply to men and women of all places and all times: *Human beings may be described as electrochemical, self-moving, feeling, and thinking processes in continuous, directed, and increasingly involved transaction with a space-time environment.*

The first characteristic I want to emphasize is, as George Kelly put it, that we are not only on the move, but we are *movement.*[2] As the physical scientists have learned to view material objects as a mad dance of electrons, moving so fast that our senses feel them as a solid mass, we have to acquire the habit of viewing ourselves as compact bundles of inner motion that may fluctuate in speed and intensity but that never rest, even in our quietest moments and in our deepest sleep.

At the electrochemical level, we now know that waves of electrical energy flow without interruption through our brains, our hearts, and our muscles. They can be recorded, measured, and analyzed in encephalograms, cardiograms, and myograms. The cells of our organism are continually moving in and out of it. Of the 60,000 million cells that compose the human body, we are told that 50 million are changed every second. They are flowing through a relatively permanent framework, which we perceive at the macroscopic level as our organism.

The words *static* and *dynamic* describe two complementary aspects of a single process. They are relative terms. A phenomenon is static for me when my senses cannot perceive its inner movements. It is dynamic when I am sensitive to them. The circulation of my blood, and the pumping of my heart are dynamic phenomena: I can feel them when I take my pulse. My bones and my muscles are also bundles of energy in movement, but I do not sense that movement, and I view the bones and muscles as static parts of my body. Intellectually, I know that they are restless energy, as the physical scientists know that the wood of the desk on which I type is made of restless energy. As a man of my generation, I take the conclusions of our contemporary sciences into account, and I say to myself: "My body is not a thing unchanging, not a substance, but a process in continuous self-renewing activity."

Such a change of viewpoint, from solid thingness to self-transforming process, takes time, reflection, and repetition to become part of my spontaneous outlook on myself. One has to live with a new idea, with a work of art that seems strange at first, or with the new self that a deep-reaching experience has created before one can attain a level of knowledge and awareness that is fully human. A conscious growth in understanding is a time process. A fruit does not ripen overnight.

IN EARLIER BOOKS I have described man as a semantic reactor and, later, as a semantic transactor. When I now describe a human being as a process in directed transaction, I am simply revealing to my readers how one grows in experience and knowledge. If you want to profit from what I went through and save yourself the labor that goes with it, you may start from where I stand now and pursue the human experiment further. This is what Korzybski meant when he called us all *time-binders.*

You must have noticed that I use the term *human beings* instead of *men.* This is intended to include more explicitly all members of the human family that do not happen to fall within the limited category of *male adult,* to which the term *man* directly refers. We are so bent on thinking of man as a "he" that we give the masculine gender to God Himself, and we are startled when we read that Emmeline Pankhurst, the London suffragette, consoled one of her followers wounded in a demonstration by saying: "Don't worry, dear. God is with us, and *She* will take care of you!"

Instead of *organism,* a term that easily brings to mind a visible body that remains identical with itself and that we recognize from day to day, week to week, year to year, I use the term *process.* It does not appeal to imagination so well, no doubt. But if you link it intellectually with other processes you know from experience, such as the flame of a candle, the wave lapping the beach, the brook that flows down a canyon, you may construe a composite notion that frees you from the substantive thinking forced upon you by the use of nouns. You still remember the grammar definition of a noun, don't you? "A word that designates a person, a thing, or a place." What can be more static than that? That static aspect became imprinted on our brain when we learned at grammar school what a noun stands for.

The third term I now include in the description of a human being is the word *transaction.* It has replaced the word *reaction* that Korzybski used. I continued using it without proper reflection. The word *reaction* reminds us of the Newtonian action and reaction, of the statement about actions and reactions shuttling back and forth. It fits with the standard psychological experiment summarized in the two letters *SR* (stimulus response), as if the impact of a stimulus was the only determinant of the subject's activity. According to the SR formula, men have to be set into motion; otherwise they won't budge.

It is not so. We are always in activity. In fact, to use Kelly's phrase, *we are movement.* All that a stimulus can do is to alter that movement, speed it up, slow it down, or give it another direction in a multidimensional life-space. When the human process relates itself to the relevant environment, a transaction takes place, not a simple reaction nor an interaction that leaves both of them unmodified in their inner structure. This transaction is viewed as a joint phenomenon that blends their energies for a while, and from which both emerge different from what they were prior to the encounter. Since the transaction is continuous, the changes in both the organism and the environment never stop. You may picture that continuity as a sequence of tiny units or quanta in order to examine it, measure it, evaluate it, modify it; but all this fractionizing is the work of your discursive activity, which is always one step behind the actual transaction.

The process-like activities of our organism are not only revealed by chemical analysis and electrography; we can observe them by guided introspection. Stop for a moment and become aware of the milling crowd of ideas, thoughts, memories, plans, desires, attractions, and repulsions that are constantly on the move within your conscious, preconscious, and subconscious self. Within us at the deepest levels, nothing really stays put. If we still pictured our inner self as an articulated structure that moves on definite hinges, it is only because we have not yet invented a mental model of ourselves that is sufficiently flexible and flowing. The present discussion is precisely an attempt to enrich and endow with a larger number of dimensions the classical "stream of consciousness" of William James.

In this, as in so many other observations, William James saw things that we are just beginning to appreciate as we should. The idea of a stream implies movements in a direction. Today we speak of the vectorial aspect of our total functioning. Manuel Riklan and Eric Levita speak of a "directed activation that underlies all adaptive behaviors."[3] A series of laborious experiments conducted by Adelbert Ames, Jr., led him to conclude that we live in what he calls a "presumptive world," a world in which our perceptions are adaptations for a purpose.[4] This vectorial component is subordinate to the "formative tendency" that Lancelot L. Whyte sees as shaping the whole cosmos in evolution.[5]

IT IS relatively easy to theorize about men as processes in transaction. All you have to do is to start with a new postulate and play with it in a plausible manner. Gradually a new construct takes shape, structured by the logic of your discursiveness.

It is quite a different achievement to get the "feel" of a radically new construct, to have it installed as a transplanted organ in the living body of our semantic unconscious. For this, we have to involve as many of our conscious activities as we can, meditating, as it were, with the totality or with the major part of our central assembly. This "central assembly" is itself a construct I built up, after the suggestion of Sylvan Tomkins, to expand and enrich the logic of our discursiveness:

> The central assembly will be seen as a dynamic self-reflexive system that integrates the various types of activity as a set of so many subsystems. Thus, the central assembly reactivity pattern—or central assembly set—of the whole space-time individual integrates his dynamics of thinking, of feeling, of perceptive and mus-

> cular habits and skills, of electrochemical functioning, of transacting with the environment, and of binding together within the now his memory of the past and his anticipations of the future.[6]

In the following paragraphs I reproduce a short essay that I wrote for the advanced students of Viewpoints Institute, Los Angeles. It might serve as an exercise for a meditation of the type I recommend. The reading of it could, with great advantage, be accompanied by the actual lighting of a candle, holding it in one hand for a while, looking at the flame, feeling its heat, etc.

> Here is a candle and a match, existing in a common environment. According to the second law of thermodynamics, they are slowly, imperceptibly, and irretrievably sliding down the entropic gradient, until they will eventually—after a very long time—disintegrate and reach an undifferentiated common state. For the time being, your senses perceive them as "things," sharply differentiated from their surround.
>
> Then you intervene, lighting the match and setting the wick afire. By doing so, you disturb the energetic balance and create a vacuity into which the energy locked in the paraffin engulfs itself. You have increased the rate of entropy, and, as matter passes from one state to another, it produces light and heat. The process of transformation becomes evident to your senses: you see the flame; you can feel its heat.
>
> This process assumes a definite form, which is manifest in the shape of the flame. It remains identical with itself as long as the conditions for its existence are right. A strong current of air might put it out. When the paraffin is exhausted, it will go out. If the oxygen of the air is prevented from reaching it, it will go out as well.
>
> This process may be seen as the passage from one level of energy to a different one, in this case a lower one. This process has a space-time structure, a dynamic pattern, a form, etc., which is not simply the "and-sum" of the molecules that combine to make a flame. That structure has a static aspect; it keeps the same shape. It also has a dynamic aspect: It is made of a flow of molecules that are constantly entering the flame, passing through it, and disappearing to leave room for the next ones. This dynamic pattern is a characteristic of the flame as a whole. It could be said to pull its potential constituent parts out of their condition of

relative repose into a well-defined vortex of entropic activity.

In the case of the flame, you started the process by lighting the match. That was a mechanical action introduced by a source of energy that lay outside the candle-match system. When the seed of a plant stirs itself up in the spring—or when conditions are right in a hothouse—a process is started from within the system itself, leading from a state of rest to a state of activity. This activity, like the flame of the candle, assumes a definite pattern: an acorn will develop into an oak, the seed of an apple into an apple tree.

The living process is negentropic; it goes up the gradient, from a lower state of energy to a higher one, from a dispersion of chemical elements to a directed choice of them, a structured combination of them, a transformation of them into a whole that is existentially new.

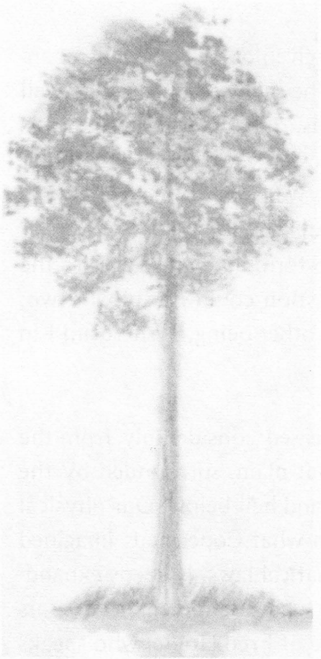
This dynamic pattern of energy is what Teilhard de Chardin is talking about when he speaks of the "within" of things. It seems that the "within" of things has emerged from lower energy stages —from atoms to molecules, from molecules to cells, from cells to plants, from plants to animals, from animals to men—in the ascending march of evolution.

MEN CAN INTERVENE in the deployment of evolution; they can act upon the within of the atom, producing either fission or fusion, with accompanying effects of heat and light. They can also intervene in the living realm and redirect the flow of energy exchanges, modifying to some extent the dynamic pattern that resides in the seed. So did the animal breeders of all times. So did Luther Burbank. Men can bring about real mutations in the gene structure by the use of x-rays.

In their activities as autonomous constituents of the cosmos, men have brought about a complexification of the very conditions of their own existence and that of the planet. They gave the world a nervous system by linking the continents with means of transportation and communication. Men, though parts of the complex whole, act upon that whole and increase its power to hold itself together for good or for ill. Henri Bergson spoke of creative evolution. By taking a hand in transactions of planetary scope, men become creators of their own fate and that of the earth on which they travel around the sun.

## NOTES

1. J. Samuel Bois, *Explorations in Awareness* (New York: Harper & Row, 1957), pp. 72–73.
2. George Kelly, "Man's Construction of His Alternatives," in *Clinical Psychology and Personality*, ed. Brendon Maher (New York: Wiley, 1969), p. 80.
3. Manuel Riklan and Eric Levita, *Subcortical Correlates of Human Behavior* (Baltimore, Md.: Williams & Wilkins, 1969), p. 324.
4. Hadley Cantril, *The Morning Notes of Adelbert Ames, Jr.*, (New Brunswick, N.J.: Rutgers University Press, 1960), pp. 41 ff.
5. Lancelot L. Whyte, *The Next Development in Man* (New York: Mentor, 1950), pp. 25 ff. I strongly recommend this book.
6. J. Samuel Bois, *The Art of Awareness* (Dubuque, Iowa: Wm. C. Brown, 1966), p. 239.



# 6. Our Place in the Ongoing Cosmos

IN HIS Bronze Age statue, Auguste Rodin shows primitive man trying with great effort to bring out of his own brain some answers to the fundamental questions that occurred to him as he emerged from the herd of his animal cousins and discovered how different he was from them. The questions were most likely these: "What am I?" and "Where am I?"

These questions have haunted us ever since. When we want to construct a philosophical model of ourselves-in-the-world or create any work of art of a lasting value, we become sensitive to the following statements credited to Paul Cezanne, the well-known post-impressionist painter.

> In order to paint a landscape well, I must first of all discover its geological structure. Do not forget that the history of the world dates back to the day when two atoms met, when two chemical particles danced and whirled until they combined. These great rainbows, these cosmic prisms, this dawn of ourselves above nothingness, I see them rise, I become saturated with them while reading Lucretius. Under this fine rain I breathe in the virginity of the world. I struggle with a sharpened sense of shades of meaning. I feel myself illuminated by all the implications of the infinite. At that very moment I am at one with my painting. . . . Yes, I want to know. To know in order to feel more deeply, to feel more in order to know more.[1]

In a previous chapter, we have already given ourselves a general answer to the first question, "What am I?" The sciences of today go well beyond the *De Natura Rerum* of Lucretius, and by using constructs derived from them, we saw ourselves as processes, as interrelated bundles of activity in a world made of pure action. We chall come again to this theme, developing it under a variety of aspects.

We shall turn to the sciences of today to formulate an answer to the second question, "Where am I?" This question could be split in two, one being, "Where am I in space?" and the other being, "Where am I in time?"

OUR KNOWLEDGE of space has increased considerably from the days when the earth was seen as a flat plain, surrounded by the ocean, and standing between heaven above and hell below. Our physical world is already much more complex than what Copernicus imagined and what Kepler reduced to simple mathematical laws. It keeps expanding from year to year with the findings of such phenomena as quasars and pulsars and with new theories like those of Fred Hoyle, who speaks of a continuous creation, and of Abbé Lemaitre, who saw the universe bursting from an initial explosion. As a social scientist, I am just like T. C. Mits (The Celebrated Man in the Street of Lilian and Hugh Lieber) when it comes to these theories. I have neither the time nor the competence to evaluate accurately the significance of astronomical speculations. However, I know and I accept some apparently well-established facts on which most informed people agree, and I judge them to be important for our philosophical game.

Our place in space has been powerfully described in a book published under the title *The Universe in 40 Jumps* by the Dutch author Kees Boeke.[2] Dr. Arthur H. Compton, an American Nobel Prize winner in physics, wrote the introduction.

The book proposes an imaginary journey in two opposite directions, one outward from our planet into the world of the stars, and one inward into the microscopic and submicroscopic worlds of molecules, atoms, and particles. The two journeys are made in a series of steps, twenty-six for the outward trip and fourteen for the inward excursion. Each step is ten times longer than the previous one, thus enlarging by a factor of one hundred the area under observation on the trip to the galaxies and beyond, and showing with a one hundred times increased enlargement the details of the world of the very small. The trip outward begins with a picture of a schoolgirl sitting in a rocking chair with a cat on her lap. She is in front of the school that she attends, and we observe her at a distance of 5 meters (roughly 16 feet). From there, we jump up in the air to a distance ten times longer, or of 50 meters (roughly 160 feet), and take her picture again. She is getting smaller, and her environment begins to show as the background in the center of which she stands as what the gestaltists call the "figure." The next step takes the viewer to 500 meters, then to 5,000 meters or 5 kilometers (some 3.6 miles), and so on. At the seventh jump (5,000 kilometers, or 3,600 miles), most of Western Europe can be seen, and at the eighth jump (50,000 kilometers, or 36,000 miles), we see the whole of the planet against the surrounding blackness of space. At the next jump, our imaginary point of observation is over 500,000 kilometers from the earth (312,500 miles), a trifle beyond the orbit of the moon, where the earth appears as a bluish astral body spinning on itself, just as the astronauts saw it and photographed it. Let us note in passing that, if we want to imagine ourselves always in line with a definite spot on the earth, we must, at that distance, sail through space at a vertiginous speed!

But let us continue. At the fourteenth jump, the whole solar system fills the field of vision. For the next twelve jumps, we have to travel at the speed of light (186,000 miles a second) to see within our field of vision Alpha Centauri, our immediate neighbor star, at the eighteenth jump. Then, at the twentieth jump, about 100 light years away from where we started, the other "immediate" neighbors of our sun, thirty-seven of them, form a cluster in which our sun itself is present but not perceived because of its poor luminosity. The next step is to a point 1,000 light years distant in our galaxy, the Milky Way, within which our solar system is propelled at some 130 miles per second. The final jumps take us in a world beyond our imagination and our capacity to represent it in pictures. It is the world of galaxies filling up an "infinite" space of millions of light years in dimension, all scattering about in a fantastic dance of gigantic swirls of energy. And in thought we come back to our starting point, conscious beings on a tiny speck of dust, invisible in the immensity about which we speculate and carried away at a tremendous speed in the mighty pulsations of the cosmos in evolution.

FOR THE INWARD TRIP, we go from the normal size of the girl's hand to greater and greater magnifications of an area of her skin, at the basis of her index finger opposite her thumb. The furry coat of the cat she is holding on her lap becomes the background and the hand is the gestalt figure.

The first magnification, obtained by the use of a magnifying glass, increases the details by a factor of one hundred. We distinguish the grooves in her skin, and a small grain of salt, half a millimeter in size, appears to have been left by chance close to a tiny cut that breaks the skin and exposes some inside layers.

In the next picture the magnification is one thousand times the actual size. The hand has become a huge surface that cannot be seen in its totality, and the layers of the skin show nerve papillae, small blood vessels, and fat cells, while the grain of salt has become a cube 5 centimeters (roughly 2 inches) high.

With the following enlargement, ten thousand times actual size, we reach the last level where color is visible. Living bacteria are discovered, some of which may have been carried unknowingly for some time. For the sake of demonstration, one is shown. It is a typhoid bacillus, set into motion by its flagella that look like two fine threads stretching from its head.

We are next at the 100,000 order of magnification, beyond the power of the light microscope. This kind of spectacle could not be seen until the electron microscope was invented in the 1940s. Now the typhoid bacillus is clearly visible, and its flagella are like long sinuous filaments wiggling in continuous motion. A bacteriophage is attacking another bacillus, and a keratin cell of the skin is curling up before falling off. The salt crystal is now 5 meters (roughly 20 feet) high.

The next magnification is 1,000,000 times, beyond the maximum that can be reached with the electron microscope. A smallpox virus, put there just for illustration, looks like a boulder on the upper layer of the keratin, and many molecules begin to appear as distinct units. The flagella of the typhoid bacillus look like small cables made of three strands wound together. The salt crystal is a huge block, 50 meters (roughly 160 feet) in size, of which only a small corner can be seen in the picture.

We are now beyond all possible photographic enlargement, even with the ion field microscope. The magnification is of the order of ten million times, at the submicroscopic level, and we have to depend on diagrams designed to express pure abstractions. There are still living creatures, such as the infantile paralysis virus, that are possible at that stage. The molecules of the air are seen at some distance from one another, and an ultraviolet ray is traced as a wiggly line.

At the magnification of 100 million times, the atomic structure of the salt crystal is visible. Distances between the successive layers of sodium and chlorine atoms in the lattice of the crystal are known. One of the three strands of the flagellum is sketched, with only the hydrogen atoms indicated on the near side. The other atoms behind those of hydrogen are not placed in regular rows as those of the sodium and chlorine crystal, and the protein molecule within which they happen to be has a width that appears to be about several times that of the strand.

IN THE DIAGRAM that represents the 1,000 million magnification, the atoms of chlorine and sodium are not sharp designs but grey shadings, showing the greater probability that an electron will be found in a certain region. Now, there is movement in empty space: oxygen molecules of the air moving at an average speed of 1,000 miles per hour when the temperature is at 50 degrees Fahrenheit. The flagellum of the typhoid bacillus is not seen as a whole, but only its hydrogen atoms floating here and there as shadowy clouds of energy.

The next jump reaches a magnification of 10,000 million, where the electrons manifest a probable presence by a shading of a relative darkness-light tone. The nucleus of the sodium atom holds the center of the picture, and twelve electrons are whirling around it at speeds of about 620 miles per second. The artist drew a sinusoidal line to show the wavelength of an x-ray that travels unimpeded through a space that appears practically empty.

At the next jump, we are ten times deeper still. The sinusoid of the x-ray is comparatively larger than another wavy line. This represents a gamma ray, an extremely penetrating one. At this scale, all objects that have dimensions observable by our sense organs have become units of astronomical proportions: the girl would be 12 million miles high, and the salt crystal cube would be more than 2,000 miles in size. We have reached an immaterial vacuum, infinitely small, where clusters of energy have free play at speeds that defy the imagination.

There are three more jumps to complete the imaginary trip. They take us into dimensions millions of times smaller than that of the wave length of light. Whatever exists at that level is represented by white spots, at relatively huge distances from one another, emerging on a black background.

LOOKING BACK at the entire trip, from the outer space with its galaxies to the inner space with its particles, life is known to exist at only ten out of forty stops, and color plays a role in only fourteen domains of this cosmic scale. We can say that we are surrounded on the outside and penetrated in the inside by an emptiness that is restless movement.

To the question, "Where are we in space?" the sciences of today give an answer that baffles common sense. We are what we might picture to ourselves as condensed forms of restless energy that we call lumps of living matter, moving among lumps of inorganic matter, in a plenum of pure energy—or better said, of pure action—working at speeds beyond what our senses can perceive.

Under the pressure of new knowledge, many categories of our common-sense language have cracked open, and they are all in pieces. I mean such terms as *matter* and *spirit, visible* and *invisible, tangible* and *intangible,* etc. They were invented generations ago by men who knew very little of themselves and of the world in which they lived. They tried to contain within simple formulations phenomena that were altogether beyond their ken. For them, the world was like a huge permanent landscape under the vault of a solid firmament. They had no knowledge of their own brain and nervous system, no understanding of the circulation of the blood, no microscope to observe the very small, no telescope nor radio scanners to search the heavens, no suspicion of microbes or viruses, no notion of nuclear physics, no algebra, no calculus, no higher mathematics. It seems high time for us to stop trying to hold within their narrow mental categories the wealth of phenomena with which we are now dealing, and we had better bring our philosophy of life in tune with what we begin to know about the world and ourselves.

The theory of relativity has taught us that we live in a space-time world. This means that time is an essential dimension of the universe as a whole, of the environment in which we live, and of ourselves as well.

We are not able to imagine that dimension as we picture the length, the width, and the height of a box, but with a bit of reflection we may learn to take it into account.

Some people function as if they had a biological clock within them. For instance, they go to bed with the intention of getting up at six the following morning, and at six they wake up. Some can tell the time of the day almost as accurately as any timepiece. All of us can make a clear distinction between what happened yesterday and what went on last week. Time, as a dimension, is not visible or tangible, as the dimension of a solid, but it is nevertheless a characteristic of WIGO (What Is Going On) that we do evaluate, if not always quantitatively, at least qualitatively. From the simple experience just quoted, we can get a feeling of time as a dimension of longer periods, of our own life, of the history of our country, and eventually of the space-time cosmos as an ongoing process.

THE TIME is long past when our ancestors believed with Bishop Ussher that the world was created 4,004 years before the Christian era. For generations, "that was more than a belief; it was a tenet of faith, the foundation on which society stood, the base of man's special status in the universe."[3] This old tenet has crumbled with many other beliefs that were invented to cover man's ignorance of facts he wanted to know and had to guess as best he could. We have the same need to know, and we are beginning to figure out how long we have been in existence as a distinct species and what preceded us on the surface of the planet on which we find ourselves.

We get our information from the sciences of astronomy, geology, paleontology, archeology, history, and such. We not only decipher hieroglyphs on prehistoric monuments and reconstitute the life of early cultures, like the Maya, the Aztec, the Inca, the Sumerian, and the Chaldean; we probe the secrets of primitive men by searching through piles of offal and debris left without any purpose by our predecessors on this planet. We even go back further, to the times when none of our species was present in a world where dinosaurs and other monsters roamed amidst a vegetation of giant size and abundance. Further still, geologists devise means of establishing how the gradual layers of rocks built the crust of the earth.

The general theme of all the answers derived from those various sciences is *evolution.* One hundred generations ago, the Greek philosophers had discovered what they called the "nature of things," which, they thought, was the static, unchanging, and permanent essence of each and every thing that existed. "A man is a man," they said, "and he remains a man as long as he lives." "A horse is a horse; a cat is a cat; the earth is what it was at the beginning and will be till the end." Today, we see the whole universe and its constituent parts in a broader time perspective. Behind the apparently permanent nature of things, we see a process, of which change, transformation, and evolution are the most pervading characteristics. We look for the place and moment of appearance of a particular geological layer, of a particular plant or animal species, of a particular human artifact, of a particular human culture, language, religion, or political organization. Even though the change is so slow that we cannot detect it easily within our individual life or that of neighboring generations, we know that it is taking place right now, at this very moment. Nothing stays put; we ourselves are carried along in an all-embracing and restless transformation.

AND SO, time is an essential dimension of all that exists. To know anything requires the knowing of its history. I shall understand public affairs better if I know the sequence of events that has made our country what it is and our culture what it is. Unless I am aware of this, I may react blindly to impulses, aspirations, and pressures on which I might have some control if I only knew whence they come and where they tend to go. I can play my part in the overall drama inasmuch as I know what is my place and function as a participant, what is the place and function of my profession, of the organizations to which I give my support, of my country as an autonomous member in the family of nations.

As far as we can ascertain today, the first living cell that took shape on the planet did so some 2,500 million years ago. We know that somewhere around 350 million years ago our ancestors were fish; 200 million years ago, reptiles that were not much like any present living form; and 70 million years ago mammals, somewhat like shrews. Compared to these, *Homo sapiens* is of relatively recent origin. Some prehumans may have been using simple tools a million or half-a-million years ago, but men of the modern type do not date back to more than 50,000 years ago, or even less.

These figures are rough approximations, of course. The further we go back in time the less accurate are our measurements. Close to us, we accept a variation of a few thousand years, more or less; way back, when the planet was in its early chemical state, we don't mind a variation of plus or minus a few million years. It remains, however—and this is the most important feature of the whole process—that the overall evolution pattern is well established now, and the comparative lengths of the various periods can be put on a scale that has a great deal of meaning. The first stages of the evolution of our planet and of the living forms that inhabit it were extremely long, and the evolutionary process has acquired momentum in its later stages, particularly after men came upon the scene.

IN ORDER to become more keenly aware of both the time intervals and the acceleration of the evolutive process, let us bring the millions of years to a more manageable scale, of a size that we can picture in our imagination. Each million of years on the cosmic scale we shall reduce to one calendar year of historical time. This will bring the apparition of the first living cell on our planet to somewhere around the time of the Greek philosophers, about 2,500 years ago.

Keeping to that proportion of one year of historical time to one million years of cosmic time, when did plants appear? Mark well the answer: It calls for a very long stretch of centuries. Plants took shape about 2,000 million years after the appearance of the first living cell, which means that, on our reduced calendar scale, life appeared five hundred years before Christ and plants did not show up until the time of the discovery of America. In other words, the progress from the simple duplication of cells to their diversification in plants required a very long period of slow transformation.

Fishes, reptiles, insects, and birds are more recent still. Mammals are barely seventy million years old, or in terms of one calendar year for one million cosmic years, they came into existence around the beginning of our twentieth century.

We are finally approaching man, whose advent was prepared by his anthropoid ancestors. One of these, *Australopithecus africanus,* about whom we read a great deal in newspapers and magazines recently, is only half a million to a million years distant, or six months or one year back in our miniature time model. It is as if this prehuman type had begun his tool-making activities two or four seasons ago. His successor, the Cro-Magnon, whose sapiens status seems to be beyond doubt, has been here for two weeks only. The paintings of the bisons on the walls of the Altamira caves are still comparatively fresh; on our calendar scale they are just four days old. Agriculture replaced fruit gathering and hunting three days ago; oral tradition does not go back further than yesterday. The Greek philosophers came on the scene last night. Our classical scientific method was formulated only three hours ago. Relativistic thinking is just an insight of this moment; we have not yet begun to exploit its possibilities.

The species *Homo sapiens,* to which we belong, is a very recent inhabitant of our planet. It is amazing how quickly he has managed to dominate in a world where some of his animal cousins have been well established long before he came to compete with them. If we accept the scientific estimate that it takes about a million years for a species to develop and stabilize itself, we see that we humans are in the very early stages of our humanness as it should eventually manifest itself on the cosmic scene. Our condition of conscious and moral thinkers dates back to only two weeks on our miniature scale, whereas our deeply set habits as mammals have been operating for sixty long years or more. No wonder that the security of the womb and the delight of the breasts have a powerful hold on our subconscious, as Freud discovered. It is only last night, as it were, that the Greek philosophers replaced superstition by reason. The Golden Rule and brotherly love are still dreams of a possible future and not skills that are mastered by the majority.

SO FAR, we have been looking backwards at the possible vestigial characteristics left in our physico-mental organism by the longstanding conditions of our prehuman past. Let us now look to that human past in greater detail, stretching the two weeks of our miniature cosmic scale to fifty years, thereby comparing the life of humankind to that of a tribe that has grown from total ignorance in its beginning, developed a culture that became a second nature, and eventually produced a very limited number of high-grade individuals who are attempting to lead it to greater achievements. Here again, we find the exponential curve of evolution as we saw it in the development of the universe as a whole: a slow, almost imperceptible growth for the longest part of the time, and a pronounced acceleration in the last stages. Let me quote from the writings of a well-known anthropologist, Professor Leslie A. White:

> It has not been very long since we gave up burning witches, cudgelling hysterics to drive out demons, and other savage practices. Even in technology, which tends to outstrip the social and ideological sectors, we have surpassed the savage at two points—fire making and the use of the bow and arrow—only within the last century or two. It is only yesterday, culturologically, that a small proportion of humanity began to emerge from a condition of savagery. For most of his career thus far, man has subsisted wholly on wild foods; less than 2 percent of human history, as a matter of fact, has elapsed since the origin of agriculture . . ., 0.35 percent since the first alphabet, 0.033 percent since Galileo, 0.009 percent since the publication of Darwin's *The Origin of Species.* A mature, urbane, and rational civilization is not to be achieved in a mere million years from the anthropoid level.[4]

Translate these percentages into years of the life span of an individual who has reached the age of fifty, the same age as that of his tribe—the human race—and whose behavior is normally determined by the habits he has acquired through life. He would have been a hunter and a nomad for forty years out of fifty. It is only ten years ago that he settled down and became a farmer. For many months of this new mode of life, he has cultivated his land with twisted branches of trees and plows made of chipped flintstones. It is only four months ago that he discovered how to melt metals and shape them into tools. Two months ago he began drawing pictures and ideograms, until recent weeks, when some genius of the tribe invented the alphabet. News is spreading that the earth is turning round on its axis. An inventor of mysterious tools, named Galileo, said so, although he submitted to the High Council of the tribe who said he was wrong. Theories are exploding hard and fast since then. And so it goes.

How can you expect every member of that tribe, particularly if he still sees himself as a naked ape, to change suddenly habits that he feels have served him well so far and to assimilate such revolutionary theories as that of evolution, which was dreamed up only eight hours ago and which has very little direct evidence to support it?

A period of history, which may appear important for one who looks at it from within, is reduced to its proper size when placed against the background of the whole cosmic story. For instance, here is how the late Professor George Sarton of Harvard, widely recognized as the outstanding historian of science in our day and age, speaks of our American culture:

> We are justly proud of our American culture, but its records are still very short. Three centuries! How little that is compared with the totality of human experience—hardly more than a moment, a wink of an eye. Will it last? Will it improve or wane and die? . . . Whether our civilization will last or not, at any rate, it has not yet proved its longevity. Hence we must be modest. After all, the main test is that of survival, and we have not yet been tried.[5]

When we study the few outstanding specimens of humanness that can be seen functioning among us—such geniuses as Aristotle, Newton, or Einstein and such great souls as Buddha, Jesus, Lincoln, or Gandhi—we have a glimpse of what the human race might eventually produce on a large scale if we know how to cooperate with the forces of evolution. Not all men nor all cultures are at the same stage on the evolutionary scale. Some institutions stopped growing centuries ago, and they survive, unchanged, like living fossils of an earlier epoch. They are the coelacanths of the human species. Some are still large and powerful; they dominated the civilized world for a while, and they keep going on what is left of their original momentum. Some may appear small and puny at their inception, but they fit so well with the stage of the evolutionary process at the time they appear that they hold great promises for centuries to come.

Since it takes on the average one million years for a species to reach its full development, man, in his fifty thousand years of existence on the planet, has covered only 5 percent of his allotted span in time. From what we are now, can we picture accurately what we can eventually become intellectually and morally? Is human nature, as we have observed it so far, the unchangeable product of a sudden creation? Are heroes, geniuses, and saints nothing but exceptional samples of a greatness to which the common man cannot aspire? Are people endowed with the capacity for extrasensory perception nothing but abnormal freaks? Should we limit our expectations to what we have achieved so far? I don't think so. I can't believe that the evolutionary process has come to a stop. Quite the contrary.

When man appeared in the stream of evolution, a new pattern of development appeared with him. George Gaylord Simpson, the paleontologist, describes it in the following terms:

> In man, a new form of evolution begins, overlying and largely dominating the old organic evolution which nevertheless continues in him. This new form of evolution works in the social structure as the old organic evolution works in the breeding population structure, and it depends on learning, the inheritance of knowledge, as the old does on physical inheritance. Its possibilities arise from man's intelligence and associated flexibility of response.[6]

Julian Huxley calls it the psychosocial pattern of evolution; Korzybski calls it the result of a special form of cosmic energy, the time-binding energy.

WE MAY be helped to accept these possibilities of unforeseeable development by using two analogies, one taken from the history of science and one taken from common experience.

In the middle of the last century, Mendeleyev, the great Russian chemist, invented a mathematical formula that took into account what was then known of the chemical elements already discovered and from this formula established the now-classical periodic table of elements. He predicted that the natural elements would be limited to ninety-two, and he described in advance the physical and chemical properties of some that were not yet isolated in the laboratory. His case is one of an unusually accurate scientific prediction. There was, however, a property of chemical elements that he did not even suspect. This property is radioactivity. Once this was discovered by Becquerel and Curie in the 1890s, it brought about a revolutionary change in all the physical sciences.

What we know of man today may be compared to what physical scientists knew of chemical elements before Becquerel and Curie. What if some human property that has so far escaped our still rather crude tools of observation and measurement becomes apparent some day and transforms the sciences of man as radioactivity transformed the sciences that deal with matter and energy?

My second analogy concerns a plant with which Californians are familiar—the agave or so-called centenary plant. Suppose you send a young specimen of this plant to a person who knows nothing about it and has to learn what it might become by observing its growth. After studying the young plant for one-twentieth of its normal existence—say a year or two—could he possibly imagine the spectacular transformation that is going to take place when the agave suddenly grows a tall stem of twenty-five feet or more, with leafless branches covered with small flowers? He could not.

WELL, mankind is a new form of life, still very young, and we may compare it to a plant that none of us has yet seen in its mature state. Even if we collect the observations of the best philosophers and scientists who have analyzed, measured, and tested man since the time of Socrates or Ecclesiastes, we are still dealing with a very small fraction—one-twentieth or so—of man's expected development. We are like the uninformed grower of an agave who, from measurements taken during a year or so, tries to guess what the plant will become when it reaches full maturity.

The thought that man may, and very probably will, some day bloom forth into some marvelous form of humanness that will surpass our most daring utopian dreams is for me a source of robust optimism in these days of turmoil. It is also a strong motivation for me to keep on participating to the best of my ability in the psychosocial evolutionary process that will bring about a better world for ourselves and for our children and grandchildren.

## NOTES

1. Quoted in *Man and His World,* International Fine Arts Exhibition, Expo 67, Montreal, Quebec, 1967, p. xvi.
2. Kees Boeke, *The Universe in 40 Jumps* (New York: John Day, 1957).
3. Ruth Moore (ed.), *Evolution* (Life Nature Library, 1962), p. 12.
4. Leslie A. White, *The Science of Culture* (New York: Evergreen, 1949), p. 356.

5. George Sarton, *The Life of Science* (Bloomington, Ind.: Midland Books, 1960), p. 163.
6. George Gaylord Simpson, *The Meaning of Evolution* (New Haven, Conn.: Yale University Press, 1949), p. 344.

# 7. Today's Humankind

IN A PREVIOUS chapter I spoke of tearing down certain constructs and replacing them by new ones. It takes some daring to do so, and, at the start, it feels safer to do it just as a game, without any binding commitment. Little by little you learn to enjoy that probing trip into the unknown, and you eventually come upon personal "discoveries" that give you a distinct thrill. I call this the game of philosophizing, and this is what the present book is all about.

The game is particularly exciting and rewarding when we tear apart constructs that have been accepted for generations. We are so used to them that we take them as essential parts of common sense. We do not call them *constructs,* and you may wonder why I insist on calling them thus. The word *construct* implies something that is put together by human invention, and this is why I use the term. The common word is a bit different: we call them *concepts,* and this implies something that is conceived—born, if you will—by the spontaneous activity of our mind in contact with reality. We take it for granted that our basic concepts have definite referents in the actual world. They do not.

To make sense of what I am now trying to say, let us speak of two worlds in which we live. One is the *empirical* world of things, people, movements that we can see, phenomena that we can observe. Some call it the world of reality, and we agree as to its existence and its properties because we all have the same sensory apparatus and share common perceptions.

The other world is the world of *mental constructs,* our man-made and man-organized world of abstractions, or units of discourse. It is the world that we carry around with us wherever we go and whatever we do. I have called it elsewhere our structured unconscious. Each item in this world is a part of speech: noun, adjective, verb, etc. A part of speech is a unit of discourse. These units differ from one culture to another, as our units of measure (inches, feet, and yards) differ from the metric system, with its millimeters, centimeters, and meters, or as our units of money (dollars, quarters, dimes, and nickels) differ from the pounds and shillings of England. In matters of measurement and of money, it is evident that our mental world determines the manner in which the empriical world is parceled out. Money serves the function of the medium of exchange everywhere, but English money is not American money. It is the same with measurement of linear distances: the American yard is not the French meter. From this evident fact, let us try to pass to the idea that our whole empirical world is also parceled out according to the mental pattern we carry about in our structured unconscious. In other words, our units of discourse determine the units of "reality" we deal with in our empirical world, or—however paradoxical it may sound at the moment—our world is what we say it is, as for an Englishman money is pounds and shillings, and for a Frenchman measurement is meters and centimeters.

"What's the big difference?" you may be tempted to say. I answer: It is very slight if you don't look closely, I'll admit. But try to tighten a French nut on an American bolt and you will understand what I mean. It won't fit. Components of machinery are not interchangeable from one system to another, and this did make lots of difference in the last war.

Units of discourse are not interchangeable either, and it makes lots of difference in international communication. It makes also more difference than we realize in interpersonal communication. Going even deeper into the world of logic, which may be seen as communication with oneself, it makes lots of difference in the way we think, how we figure out what to do and how to do it. In philosophizing, a reexamination of our units of discourse is in order.

ONE of these important units of discourse, one that has held a central place in all philosophies that I know, is the concept—or better said—the construct of *man,* or *human nature.* It is taken for granted that each and every individual has the same human nature, and the whole of humankind has it as well. In our mental world, this construct of "man" and "human nature" is all pervasive; it spreads like a delicately engineered cobweb all over the whole field of our activities. In it, we catch whatever comes our way or emerges from us: sensations, perceptions, statements, experiences, relations with things and with people, plans for the future, and memories of the past. It determines the form of our being-in-the-world, as existentialist psychologists have it. The world in which I actually live, function, suffer, enjoy, worry, grow old, and will die is the world structured by my cultural ancestors, by people who never knew the actual conditions in which I have to live. I may have decorated this web to suit my fancies, I may have altered it slightly to make it more comfortable. But its structure was handed down to me as an inheritance I cannot refuse. What I am trying to do now is to question the wisdom of its basic design and recreate it to fit the space-time condition in which I find myself—in these United States, in the last third of the twentieth century.

In the empirical world of existents, of which I am one, human nature does not exist by itself; it is always embodied in some individual man or woman, boy, girl, baby boy, baby girl, old man, old woman—individuals who are healthy or sick, happy or unhappy, fearful or confident, friendly or unfriendly, known to some extent or totally unknown. As the physical scientists see lumps of matter as swirls of electrons, I can see these individuals as living clusters of feelings, attitudes, ideas, purposes, aspirations, set habits and drives that interact with one another and transact with the outside world in ways often unpredictable. These individuals constitute the empirical world of humankind, of the milling crowd of 3.5 billion human beings all over the planet. Thousands of these individuals disappear every minute and thousands are born in larger numbers, the whole mass exerting a pressure upon itself and its environment.

This growing population of existents covers the land masses of our planet. In the deserts and in Antarctica there may not be more than one in many square miles, in cities there are thousands crowded within limited spaces. They are moving about in a variety of displacement patterns, some traveling freely from continent to continent and some restricted to a bed of sickness, a cell in a prison, or a hovel in a ghetto out of which they have neither the means nor the energy to venture. A few privileged ones, in our age of victorious technology, were sent aloft by a well-organized and costly team of their fellow humans to set foot on the moon.

WHEN WE SPEAK of *men* in the plural, instead of *man* in the singular, or of a *human nature,* which supposedly is the same for every member of the species, we point to definite individuals in the empirical world and not to a construct of our mental world. We may speak of humankind as a whole, as I am doing now. We may speak of large segments of it, distinguished by the continents they inhabit: Africans, Asians, Australians, Americans, or Europeans. We speak of political groups, of nations and of blocks of nations. We may use the analogy of Mao Tse Tung and see them divided into two vast camps ready to come to a worldwide clash: the countrysides of underdeveloped areas and the momentarily ruling city of technology, wealth, and power.

We may break down this totality any way we wish, speaking of the old generation and the young one, thus emphasizing the generation gap. We may speak of the two worlds of communism and capitalism, with a third world of nations that stand aloof from the confrontation of the political mastodonts, or of the four world of body types described by physical anthropologists: the negroid, caucasoid, mongoloid, and australoid.

For my own purpose, I prefer dividing the population of the globe into groups differentiated by the language family to which they belong. This gives us eight cultural blocs, the Hamitic, Semitic, Austronesian, Amerindian, Indo-Chinese, Japanese, and the Indo-European to which we belong. This last group can be subdivided into subgroups, such as the German, which includes the English and Scandinavian, the Latin, which includes the French, Italian, Portuguese, etc.

I choose this grouping because I see it closely related to the typically human characteristic of living in a mental world that gives a definite meaning to the empirical world they share with the rest of mankind. It is the world of their episteme, of the methods of thinking-feeling, of the types of analysis and synthesis they accept as practical and valid, of first-order experiences they take as genuine phenomena of living, and of values they ascribe to whatever they do and whatever other human beings do. We find a close correlation between that epistemic mental world and the syntactic structure of the languages spoken. In our own case, all our languages, in spite of apparent diversity, are built on a common fundamental pattern: it divides the empirical world of ongoings into two main classes, that of nouns or substantives on the one side, and that of the predicates, verbs, and adjectives on the other side. This fundamental distinction was accepted as the natural human way of thinking by our cultural ancestors, the Greek philosophers, and it was cleverly organized into a system of logic by Aristotle, the codifier of the rules of rational living. This living style was taken as the only one that deserves to be called fully human. This epistemic attitude gave a direction to all activities of the members of that cultural family, taken singly or in groups. It determined the very structure of their institutions—religious, political, educational, and economic.

HISTORICALLY this Western world has forged ahead of the rest of humankind in the skills and the arts that made possible its domination of the planet. Our technology has created machines to exploit the resources of the earth, to wrap up the planet with a network of ship lanes, railroads, airlines, communication by cables and wires, and lately by means of radio and television broadcasting stations. Our military power and our economic achievements have given us for generations the capacity to rule over the indigenous populations of Asia and Africa. Even our churches and our philosophical schools have for a long time nurtured the grandiose delusion that theirs was the true version of human destiny. Our own type of civilization becomes *Civilization* pure and simple, as in Durant's ten-volume *History of Civilization*.

I readily admit that I am a Western human being, and the only place from which I can observe the world of humans is the field of Western culture. I am one of many billions of members of the species *Homo sapiens* living on a planet that runs its elliptic course around the sun. I am one of the survivors of the generation that remembers when the year on the calendar began with the figures 18 instead of 19. I was an adult when the first World War tore apart the old map of Europe and brought about the crumbling of the Austro-Hungarian, German, and Russian empires.

I am one of those for whom the crystal set, capable of receiving radio waves and translating them into sound, was a revelation and a trip across the continent meant five days on the train. I remember the Russo-Japanese War as you remember the Korean War.

LET US, however, forget me as an individual, and let us picture to ourselves the average American or Canadian of the first decade of this century. The average young man in those days had a grade school education. He was already well above average if he had absorbed whatever education high school could give him. If he had a college degree, he was definitely exceptional, one of the privileged few, a member of the elite. He read the daily newspaper that received news from various parts of the world by means of the Morse code. It contained no photographs of distant events but instead sketches drawn by an artist on the newspaper staff who drew what his imagination translated from the wire service. There was no ecumenism among the religious bodies; quite the opposite. There was no collective bargaining between labor unions and management. There were no Pugwash conferences, where scientists from countries that threaten each other with atomic weapons gather in a friendly atmosphere to study common problems. There were practically no small nations on the map; they were colonies of one of the three or four big powers. There was no United Nations headquarters, no secretary-general of any world organization. The League of Nations was the dream of some scholars, one of whom became president of the United States and later tried in vain to have the dream accepted by his own nation. After a war that spread wider and lasted longer than anyone had anticipated, there was a meeting that remade the map of Europe. It was the first meeting of that size since the Vienna Conference of one hundred years before, after the defeat of Napoleon Bonaparte. The British Empire was spread over the globe, and the United States had its first experience as a world power.

The average man did not pay an income tax. Charles Lindberg had not spanned the Atlantic in his solo flight; John Glenn had not orbited the earth; and nothing but the science fiction of Jules Verne or H. G. Wells would possibly put a man on the moon. No good Pope like John XXIII had appeared among men; no Gandhi, no Albert Schweitzer, no Martin Luther King. Rutherford, Bohr, the Curies, Millikan, and the rest of them were more like magicians than like the professional scientists-administrators who now direct the national laboratories of Brookhaven or Lawrence or the atom smashers at Stanford or Cern in Switzerland. Einstein was a puzzling theoretician whom practically no one understood. There was no pollution on the earth and no satellites whirling around it by the hundreds.

Today we open mountains with TNT or we slice them with bulldozers. We are planning to detonate H-bombs to bring the Atlantic and the Pacific together, mixing their fauna and flora as nature could not do.

INDEPENDENTLY of our communication networks, a felt oneness of humankind seems to set the young generation going in a common movement of revolt in countries very different in their culture and politics. The missionaries from Western religions see their propaganda slowing down, while Eastern esoteric philosophies attract our thinkers and artists. Some well-meaning lovers of tradition are still trying to adapt our present condition to the perennial wisdom contained in the Great Books of the Western World, while some venturesome analysts are turning upon the body of their own culture new tools of dissection and investigation. They are bent on discovering how their mental world was created and how they can master the art of remaking it to suit the yet unformulated aspirations of the growing generation.

This is the group to which I belong. I see the history of the world, not as a series of events that succeeded one another on a stage, but as a sequence of transformations, renewals, mutations, etc., through which the human species has gone, emerging from one metamorphosis after the other, becoming at each stage more complex in its institutions and more powerful in its grip upon the planet. We are carried along in a vertiginous maelstrom of evolutionary forces, which we have turned loose upon the ecosystem within which we exist.

What will this ecosystem eventually become? I don't know, and I can only guess. One thing seems clear: our world of constructs has become too exiguous and too simplistic for the empirical world that is exploding in our hands. We have to regain mastery of the Frankenstein's monster that is taking over. We created it, unaware of what was likely to happen; we have introduced into nature a disorder for which we know we are responsible. We have to bring out of that confusion a new order of existence for ourselves and for our environment, a world transformed and transhumanized.

We have achieved it more than once, though on a small scale. We have transformed nature and made it richer than it could become in millions of years if left to itself. We already have reminded ourselves in an earlier chapter that primitive men had nothing but the song of the birds, the call of the beasts, the murmur of the running brook, the roar of the falls, the splashing of the waves, the peal of thunder, and their own crying or yelling to give them the noises that they turned into sounds. They sang; they devised scales, melodies, counterpoint, chords, instrumentation, symphonies, operas. The world of noise became a world of sound, tamed to the measure of humankind, and expressing, sustaining, and enriching the most sophisticated moods of generations growing in artistic humaneness. We did not simply put together in a pattern noise elements scattered all over in a random fashion. We actually brought into existence sounds and complexes of sounds that were not within the potential capacity of nature left to itself.

Could we achieve something similar on a larger scale, on a set of dimensions that would envelop the totality of human experience? There is no harm in dreaming of it. In fact, dreams are often the first stage of great accomplishments.

THE ORGANIZATION of which I dream would not be the result of trends already measurable in nature. A study of those trends would indicate that it is most improbable: the resources of the planet are becoming exhausted at an increasing rate; the air, the lakes, and the streams are polluted; our living space is getting crowded to a dangerous point; we have accumulated a surplus of bombs that may detonate at any moment and wipe out every one of us in a final flash. True. And yet, the human urge to create remains, and it is from it, and not in the trends of events, that I perceive and feel the coming of a new human order. This world-in-becoming is the new heavens and the new earth of our sacred writings;[1] it is the man-made abode of the "third human nature" of which Gardner Murphy spoke.[2] It will be engendered by the formative tendency of the total cosmos as it funnels its strength through a select group of human transactors. It will be brought about by a distinctly human form of creative evolution and not by the already known energies of nature unaided.

Are there any indications that this surge of creative evolution is operating within humankind at the present time? Yes, there are. If we look long and well, we will discover a global nisus, an ordering tendency, that has been working for generations in ways that were not always easy to understand. The slow movements of cosmic phenomena cannot easily be detected within the short span of a generation nor even within the longer stretch of our national history. Thanks to our greater sophistication in interpreting processes that advance with oscillations transverse to their vectorial thrust, we begin to perceive an overall direction that confirms a robust optimism. We grope, search, and experiment, often at a great cost of human life and suffering, but slowly—how slowly, indeed!—we crawl forward to a new stage of human existence.

We are on the move. In fact, we have been on the move for generations, toward a humankind that will be one in its functioning and not merely one as possessing a common metaphysical quality called human nature. This functioning oneness will involve new relationships, new institutions, new styles of living.

TEILHARD DE CHARDIN calls noosphere that layer of human living forms that is gradually joining in a tight network its formerly distant nodes and threads, to envelop the whole planet and give it a character found in no other member of the solar system. The third planet from the sun has become humanized. It has begun to probe into the vastness of the space in which it floats. It has become self-reflexive, shooting from its surface and keeping within the proper range hundreds of satellites endowed with electronic sensors that observe what is going on down below in the natural interplay of atmospheric elements and in the not-so-natural preparation of competing world powers for a war of mutual annihilation.

This noosphere is a phenomenon created by men and perceived by men, as music concerts and recordings were invented by men and have become an integral part of men's lives. It could be seen as the process of evolution become conscious of itself in a particular locus of the space-time universe. It is the planet endowed with a brain, capable of deciding what it will become, for good or for ill. It has reached a new stage of growing maturity, prepared by periods, relatively short if we measure them on a cosmic scale, of prehuman and protohuman development. It is the Earth waking up to consciousness, like a child who discovers his own physical and psychic self. It seems at this moment to enter the stage when it tries to make sense of some powerful and unexpected drives surging within its deepest insides, like the youngster who feels the disturbing and tantalizing tremors of incipient puberty, announcing for the distant future an adulthood of stability and self-possession.

The oneness and interdependence of the constituent subgroups of the human family are obvious in the political field where the need for a world order is very keenly felt after a quarter century of hesitant experimenting with a United Nations Organization. We see this oneness in the technological world of machines, agricultural practice, and industrial production. We see it in folkways, songs, and dance styles that spread like a contagion among the young people of every culture. In the world of economics, we have the multinational industrial firms that branch out and blend their activities irrespective of national boundaries and stages of technical development.

WHAT IF WE push our observation deeper, to the affective and value-laden aspects of our reactions to what is happening around us and within us? Is there now, and was there in preceding centuries, a felt tendency for men to bind themselves together in a common fate? Do we observe and do we feel, in that noosphere of which we speak, a centering tendency similar to the drive for holistic complexity that we see in the atom, the molecule, the cell, and in all organisms? Is the atrraction of man to man—or its polar alternative, the rivalry between man and man—a dominant feature of human experience?

It seems that it is. If we look at history as the drama of men attempting in various ways to bind together the whole of humankind into a single unit by conquest, religious conversion, economic penetration, or technological development, we see every such attempt as a manifestation of some deep urge that breaks out here and there at some point of the space-time plenum, is never fully satisfied, and reappears again under some form or other. What do men want that they are ready to bring about by any means, fair or foul? What possesses men and works them into a frenzy that cannot be stopped, like that of the beast in rut obeying blindly the vital drive of its species for survival?

The noosphere-binding urge reveals itself as the most powerful and ruthless form of energy that men display. Under its impulse they tore apart the atom itself and made it a thundering tool with which to subjugate the human race into a unity of politics and purposes. This urge makes men ready to take the ultimate gamble of being one in a common mode of life or of not being at all. There was a time, not long ago, when we claimed we were making the world safe for democracy, or for our kind of noospheric oneness. Others have wanted to unify the world in the practice of Marxism-Leninism. All great religions claimed, each one in turn, to be world religions, and many glorify their martyrs who died to make their form of worship prevail. All philosophical systems have striven to account for a common human destiny.

WHAT all these undertakings have in common is that they are determined to make the world one, happen what may. At the same time as politicians, religious leaders, and military men attempt to make the human race one by propaganda or sheer force, some moralists and philosophers proclaim a oneness of a different kind, which they see as the obvious character of mankind in evolution. "No man is an island," writes John Donne. "To be is to be related," says the philosopher-mathematician Cassius Jackson Keyser. Confucius formulated the Golden Rule centuries ago, and Jesus repeated the commandment: "Love Thy neighbor as Thyself." More recently, the itinerant philosopher Hermann Keyserling saw what he called the *emotional order,* meaning the affective component of our behavior, as the most adequate replica in man of the order of the universe. Sylvan Tomkins speaks of the *logic of feeling* as a truer picture of the universe than the logic of strict intellection. Teilhard de Chardin sums it all up in a bold statement:

> Love has always been carefully eliminated from realist and positivist concepts of the world; but sooner or later we shall have to acknowledge that it is the fundamental impulse of life, or, if you prefer, the one natural medium in which the rising course of evolution can proceed.[3]

The young generation says simply, "Make love and not war."

When the world was seen as made of distinct natures distributed in a hierarchical order and interacting with one another according to definite laws that maintained the proper distance among its elements, its overall oneness of felt centration and fusion was not studied as a special phenomenon deserving explicit attention. Then came Jan Smuts, in the twenties, who spoke of holism as "the concrete character which distinguishes all natural objects in the world of experience."

At the level of the noosphere, that concrete character of holistic centration becomes the awareness of our solidarity as a species sharing a common experience on a small planet and a feeling of togetherness to be fostered and transformed into actual love given and received.

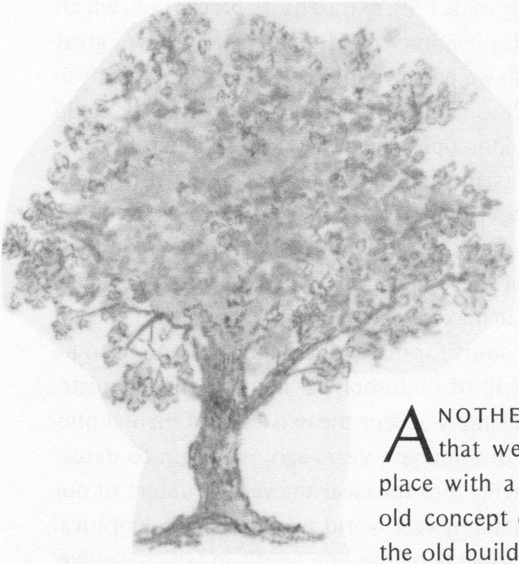
WHATEVER happens to the world of humans—in events that are divisive, such as wars and rivalries, or conjunctive, such as joint international enterprises and meetings—we had better see them as the cyclical pulsations of the evolutionary urge working its way in laborious self-renewals, destructions, and transformations and creating step by step the transcendent unity for which we are heading.

The men of today stand at the growing tip of this vectorial process. Their main concern is to acquire the knowledges and the necessary skills to become experts in the art of living, working, and growing together in a felt relation of loving unity.

Mankind of today is going through a process of evolutionary centration that it has not experienced until now. A sound philosophy has to provide formulations consistent with this all-pervasive ongoing.

## NOTES

1. See 2 Peter 3:13, and Isaiah, 65:17, 66:22.
2. Gardner Murphy, *Human Potentialities* (New York: Basic Books, 1958).
3. Pierre Teilhard de Chardin, *The Future of Man* (New York: Harper & Row, 1964), p. 64.



# 8. Orders of Reality

ANOTHER construct of long standing that we have to tear down and replace with a new mental structure is the old concept of *reality*. In a thriving city, the old buildings are demolished and new ones are erected in their place. The winding roads of yesteryear cannot accommodate the traffic that swishes at high speed on our present highways and turnpikes. Our long-standing mental categories and snail-like communication methods have to be modernized as well.

For hundreds of years, the word *reality* has meant, for people of Breed Two and Breed Three,[1] a world of things and people that exists out there, independently of what we say or do about it. The family of related words—*real, realism, realistic, realize,* etc.—came into our language from the Latin word *res,* meaning *thing.* It refers to the thingness of whatever we perceive, touch, weigh, taste, or measure. If you ask me what makes the thingness of a thing, I cannot answer. It is one of those terms that everybody accepts, everybody understands, but nobody can define. It is like the word *time,* of which St. Augustine said: "If you don't ask me what time is, I know what it is. But if you ask me, I cannot tell you." Our generation is more advanced than that of Augustine, and we do not hesitate to probe into the foundations of our basic cultural categories. Since Einstein, time has lost its absolute meaning; I don't see why we should take reality as so sacred that it could not be included in our searching inventory of the thinking tools handed down to us from previous thinkers and moralists.

TODAY we are aware that our perceptions are not limited to direct sensory contacts. Leaving aside ESP, extrasensory perception, which is still in the class of debatable phenomena and theories, we know a great deal about happenings, which we perceive indirectly by means of physical or mental instruments. Physical instruments include visual or radio telescopes, microscopes, oscilloscopes, Geiger counters, electronic sensors, etc. Mental instruments include new methods of introspection, new theorems of epistemology, semantic reaction, scale of abstraction, multiordinality, circularity, choice of mental models, the structural more, etc.[2] The perception of these happenings opens the door to a new world of "reality"; in fact it makes available to us a wealth of newly discovered "realities." It accounts for many phenomena that used to be taken as lying outside the field of philosophical inquiry. In the epistemology of today, we do not simply accept the existence of mental phenomena that we could not discriminate years ago; we begin to detect their relationships, thus bringing into the clear the very structure of our metaphysical world. This metaphysical world penetrates our empirical world. In fact they are two aspects of the one world in which we live, the only "real" world each of us knows. When I speak of our "metaphysical" world here, I do not refer to dry-as-dust notions floating somewhere in the stratosphere of disembodied abstractions; I speak of what I call elsewhere our *semantic* or *epistemic* world, the "what-it-means-to-me" individual world that is filled with mental categories, values, aspirations, preferences, and purposes.

This reality is ordered, its elements are related to one another in a definite manner, and this set of relations forms a multilayered structure. We are dealing here with what we could call either orders of reality or orders of abstraction. Let us enter this world of epistemic reality through the door of one of the arts.

In 1958, the Metropolitan Museum of Arts of New York published a series of portfolios under the title of *Seminars in Art.*[3] Right at the beginning of Portfolio 1, they present three paintings, which we can use to demonstrate orders of reality. The first one is the well-known *Whistler's Mother;* the second is *Madame Leblanc,* by the French painter Dominique Ingres; and the third one is *Madame Renoir,* by her artist-husband, Pierre Auguste. Each of these is the portrait of a "real" woman, one the mother of the artist, one a client of the painter, and one the wife.

We have already two levels of "reality": the "real" portraits (reality$_2$) of "real" persons (reality$_1$).

If we take time to observe well and to reflect on our observation, we become aware of a new kind of "reality" (reality$_3$) that these paintings have brought into existence and maintain in a state of permanence. This is precisely the "reality" that makes them worth thousands of dollars and makes them deserve a place in the highly rated museums of Paris, New York, and Philadelphia. This subtle reality is their composition. It expresses a mood suggested to some extent by the subject of the painting, but rendered explicit by the arrangement of shapes and colors chosen by the artist and by the way he puts them in relation with one another. This reality$_3$ is what the paintings say, what makes them different from mere pictures, what onlookers perceive more-or-less consciously, what makes the authors of the *Seminars in Art* choose them as typical samples of artistic beauty.

In the case of *Whistler's Mother,* the mood is a complex of gentle distinction, reflection, and quiet acceptance of old age. The subject is distant from the bustling world of the younger generation, and she exists in the loneliness of advancing years. The overall mood is like a field of meaning that emerges from the design and the shading. It pervades the painting and surrounds it with an aura of significance. It is achieved by techniques that John Canaday describes as follows:

> It is obvious that the quiet and tender mood Whistler had in mind could not be relayed to the observer through vivid colors and jagged shapes in complex agitated relationship to one another. Hence the artist reduces the background to a few subtly spaced rectangles of subdued neutral tones. . . . The head, the hands, and the scattering of luminous flecks on the curtain serve as relieving accents, lighter in tone and livelier in shape, in a scheme that might otherwise have been monotonous and melancholy.[4]

The second painting, that of Madame Leblanc by Ingres, conveys a very different message, and the means employed to do it are also very different. Madame Leblanc was without a doubt a member of the prosperous middle class of her times, and she was endowed with a personable combination of pleasing features. She is sitting in a stylish chair, one arm of which is covered with an exquisitely painted drapery or shawl, and the lines of her body, from the soft rectangle of her face to the perfect curve of her neck and the fine tapering of her fingers, are traced with the mastery of drawing typical of Dominique Ingres. The composition—and the message or atmosphere—is one of elegance, grace, and refinement. There is no warmth to it. The person that sits there has a correct beauty that demands to be admired, not an attractiveness that invites a loving contact. To the reality of the person, as an individual that her acquaintances may recognize, is added a new, subtle, and mysterious reality made of shapes and contours designed into linear delights in a physical environment of comfortable luxury. The colors are rich and velvety.

The third painting, Madame Renoir, fills the canvas with her plump body and her roundish face, which is framed with a simple straw hat with two bright roses planted on the side. She is fleshy and warm, distant and self-sufficient, and yet ready to give herself without restraint to whomever has won her allegiance. She is very different from the revered mother of Whistler or from the fastidious sitter of Ingres. She is woman, all woman, the source of all warmth and life in the cozy world of the artist, her husband, lover, and admirer.

> The picture has a second and deeper meaning beneath the apparent one. It becomes the image of the earth goddess while it remains the tender record of an exceptionally young woman in a straw hat with a couple of roses pinned to it. In other words, the picture's message is universal. . . . The image combines a sense of vivid life with its stability. Much of this life comes from the rich sparkle of the pigment. The picture would be ruinously transformed if it were painted with the almost chilly precision which is appropriate to the Madame Leblanc or with the softness of a Whistler.[5]

Three paintings, three women, and three messages. The women were real individuals, the paintings are real works of art shown in real museums. The messages are "real," too. One expresses reverence for dignified old age; one is made of distant admiration for elegance and classic beauty; one repeats the eternal appreciation of man for the sensuous and bright incarnation of life in the fleshly forms of a beloved woman. Of these three realities (reality$_1$, reality$_2$, reality$_3$), women, paintings, and messages, which is the most effective in the world of human interactions and exchanges of values?

The question cannot be answered if we give to the word *reality* a uniform meaning. To be real is not in all cases to be a thing that we can see, weigh, touch, or measure. It is to have a certain kind of existence in the world in which we live. These three realities—women, paintings, and messages—have no common measure; they cannot be compared with one another. To be real is to exist, either empirically within the reach of sensorium or abstractedly within the reach of our capacity to evaluate, to understand, to like or dislike, to accept or reject.

UP-TO-DATE epistemology has invented formulations to cover these more explicit experiences of reality. It speaks of abstraction as different from first-order perception. From a concrete situation, in the cases we are now discussing, from the perception of lines and colors by our eyes and our brain, we abstract a message, a mood, an atmosphere of meaning that is strikingly different from one painting to the next. This abstraction is not of the person herself, not of the mother of Whistler, nor of the wealthy client of Ingres, nor of the beloved wife of Renoir. It is of the composition, of the relationship among the lines, the colors, the vividness or the neutral quality of the pigments. It is also, and simultaneously, of the knowledge and the attitude we bring to the experience of looking at the painting. It emerges from the semantic transaction between the onlooker and the work of the artist.

When this is pushed further away from a concrete subject, it becomes a work of purely abstract art, a combination of forms, colors, and shades that has no distinct referent in the empirical world. David Edstrom, whom I met in the early twenties, sculpted a bombastic, convex curve to express bloated pride and a hollow, concave, withdrawing curve to mean pathological fear. Jackson Pollock throws an irregular network of multicolored lines on the canvas, leaving us the freedom to arrange them in whatever pattern our mood of the moment suggests.

Between these two extremes, portraits at one end of the continuum and pure abstractions at the other, you may put in the middle, in whatever sequence suits your experiences and preferences, the creations of all painters and sculptors who have produced realities$_3$ out of their own imagination, with or without using a subject as a starting datum. This could include the monumental *Gates of Hell* of Auguste Rodin, the tragic *Guernica* of Pablo Picasso, Gustave Doré's illustrations of Dante's *Divine Comedy,* which is itself a pure work of imagination in a different art form. I see these great works as the masterful products of our culture at certain times of our history. I see them also as boosting relays in the evolution of that culture from its humble beginnings to its more complex and richer stages of today. They belong to the world of realities$_2$, the world of art objects that we treasure, and they facilitate realities$_4$, the enjoyments and inspirations we derive from their messages (realities$_3$).

IT TAKES TIME and training to become responsive to these abstract realities. I can best illustrate this by narrating a personal experience. It may help you to make sense, in your own way, of experiences similar to mine, which you surely have had in the course of your life.

Many years ago I lived in Paris for a while. When I arrived there, my appreciation of painting was of the most primitive kind, at the level of calendars and magazine covers.

During the first week of my stay I visited the Luxembourg Museum. The galleries form an L, like a carpenter's square. The main entrance is at the end of one branch of the L. It opens into a large hall where I saw a collection of paintings and sculptures, none of which impressed me very much. When I reached the corner of the L-shape, a large painting drew my attention. It was one of those highly polished and detailed canvases of the mid-nineteenth century. A convalescent woman was propped up against a bank of embroidered pillows in a neatly arranged bed. The window of her room was open, giving out onto a garden. There you could see trees in bloom. It was spring; nature was basking in a fresh sunshine that came into the room and shimmered on the silk of the bed cover. There were other personages in the room, members of the family, no doubt. I remember them vaguely. They were looking at the patient with loving hope, rejoicing at the faint pink that colored her cheeks.

I liked the painting. I could almost feel the softness of the silk of the bedspread, the pleasant warmth of the sun melting away the coolness of the spring morning. It was a cozy, homelike atmosphere, with a theme of renewed life singing in soft colors to the accompaniment of sunlight and flowers in springtime.

From there, I turned left into a long gallery where paintings of more recent date were lined up on the walls. I walked straight to the very end, where the newest acquisitions were located. I felt I was entering a world of planned ugliness. I still remember a Matisse and a Chagall that puzzled me no end. What struck me at the time was the lack of realism of these more recent paintings, their utter disregard of the fine details of the scene they depicted, the roughness of the finish, the blotches and streaks of crude colors splashed on the canvas. I could not see any beauty in them.

I turned around and retraced my steps, glancing along the walls for some work that I could understand and enjoy. My eyes fell upon a Madonna by Maurice Denis that gave me an unpleasant shock. I saw it as a specimen of mischievous irreverence, almost of premeditated sacrilege. The canvas was of a coarse texture, like that of a potato sack. A violent dash of yellow ocher was framed with blocks of dark browns, dusty reds, and inky blues that contrasted with it. The face of the Madonna was a rough outline, devoid of the expected sweet features; the head of the child was that misshapened blotch of granular yellow that shone with brazen insolence. I walked out. This modern art made no sense to me.

A YEAR LATER I went back to the Luxembourg. For many weekends during that year I had visited the museums, art galleries, and studios with a patient and kindly critic who had revealed to me the world of artistic vision and helped me translate into personal experience the language of the brush.

This time, I was walking through the Luxembourg with new eyes. The convalescent–spring-morning painting did not impress me now; a good color camera could achieve as much with mechanical precision. When I turned to Maurice Denis's Madonna, I was overwhelmed by the light that shone forth and almost dazzled me. The coarse texture of the canvas had disappeared in a sunny glow that radiated from the head of the child, illumined his mother's face with a translucent mist of love and wonder, and revealed by contrast the earthly shades of the environment in which he was born.

I was held on the spot for a time I could not measure. The painting made sense to me. The experience was so rich in meaning that it overflowed my reservoir of words. I could not even talk to myself about it, as I could when I admired the spring-morning scene a year before. I had to keep silent within, receiving through my eyes a message given exclusively in the language of color.

The message was not of the coarse canvas, not of the crude colors, not of a particular woman holding a particular baby. It was neither $\text{reality}_1$ nor $\text{reality}_2$. It was a message that brought me where life budding forth within the wraps of love shines with a glow and beams its glory on the most humble surroundings. In the realm of pure abstraction, reached by jumping away from material appearances, I was in knowing contact with something more real than physical reality. We may call it $\text{reality}_3$.

IT DEMANDS some training to perceive what lies beyond the obvious that we sense. I got more from abstract art at my second visit to the Luxembourg because my good friend, the art critic, had imparted to me some of his skills. From him I had learned where is the jumping-off point from photographic reporting to creative art, from the techniques of perspective, shadows, and design to free arrangement of colors, shapes, and symbols. Thanks to him, I was beginning to read some meaning out of a composition with the brush.

If we examine carefully where we are when we reach the level of $\text{reality}_4$ in our transaction with the message of the artist, or $\text{reality}_3$, we notice that we are within the realm of broad generalizations suffused with values supreme. Madame Renoir became the image of the earth goddess, and, as John Canaday put it, "the picture's message is universal." In my own case, the Madonna of Maurice Denis catapulted me to "where life budding forth within the wraps of love shines with a glow and beams its glory on the most humble surroundings." This is indeed the realm where the language of poets like Walt Whitman seems the most fitting, way beyond the humdrum of down-to-earth conversation and far away from logical exchanges of rationalized opinions.

This realm is where the artists and the poets are at home. It is also the realm that mathematicians and scientist-philosophers have recently entered as wide-eyed explorers. From it, they come down to their laboratories and technical centers to achieve wonders that nobody could dream of before. We may be actually discovering a summit of human experience, revealed as the stage of evolution proper to our day and age, where poetry, art, science, religion, and the mastery of heretofore mysterious forms of energy have a common abode. Men of our generation are learning to transact with a new reality, reality$_3$, to bring it into existence at will, and to manage it to suit their purposes. They have known sin a generation ago when they released the energies of the atom; they may be on the point of witnessing the glory of the God that is in them when they take their rightful place in the total Reality that only seers and prophets could withstand in earlier generations.

I SEE mathematicians as artists, too. They do not translate their esthetic experience into designs and colors, as do the painters. They spread on a blank page symbols that are even more abstract than the distorted creations of Picasso, Braque, or Dali. Ask them to explain in words those symbolic messages that give them such a thrill, and they will not know what to say. They remind me of my friend, Harry Holtzmann, the disciple of Piet Mondrian, who threw up his arms in despair when I asked him, "What do these lines and squares mean?" "Look at them," he would say, "these are not to be talked about; they are to be looked at!" For the uninitiated, a line is a line, a square is a square. Unless you jump from them to the abstract meaning they suggest, you cannot read their message

Similarly, if mathematics is for you the prosaic technique of counting dollars and cents, of measuring acres of land, of rating the horsepower of your car, you miss the esthetic thrill of sensing invariants, matrices, groups, and disembodied structures. When your friends, the mathematicians, jump into the blue and rocket themselves out of sight in their abstract flights, you are left panting behind.

Are we, plain T. C. Mits,[6] utterly unable to enjoy the abstract art of mathematics? I don't think we are. You don't have to be a painter to appreciate painting, nor a composer to enjoy a symphony. Why should you have to possess a master's degree to gain admission into the world of pure mathematics?

In fact, we did it years ago, when we started counting and got the abstract notion of number. We were young then, and the physical world was most real to us. Yet, we jumped easily out of it into the world of abstractions. As long as we counted apples and visualized that two apples in our left hand and two apples in our right hand made four apples in all, we were down to earth at the level of sensory perception; but when we accepted the immaterial fact that *two and two is four,* we soared from the world of tangible apples, sticks, or pennies clear into the blue sky of pure abstraction, from reality$_1$ to reality$_3$. Why can't we fly higher still into the stratosphere of immaterial structures of realities$_4$? Let us try.

HERE is a mathematician, Arthur S. Eddington, describing in plain language the picture they draw of the atom and inviting us to rocket ourselves from its material implications:

> In describing the bahaviour of an atom, reference is often made to the jump of an electron from one orbit to another. We have pictured the atom as consisting of a heavy central nucleus, together with a number of light and nimble electrons circulating around it like the planets round the sun. In the solar system, any change of the orbit of a planet takes place gradually, but in the atom the electron can only change its orbit by a jump. Such jumps from one orbit to an entirely new orbit occur when an atom absorbs or emits a quantum of radiation.
>
> *You must not take this picture too literally.* The orbits can scarcely refer to an actual motion in space, for it is generally admitted that the ordinary conception of space breaks down in the interior of an atom; nor is there any desire nowadays to stress the suddenness or discontinuity conveyed by the word "jump."
>
> It is found also that the electron cannot be localized in the way implied by the picture. In short, the physicist draws up an elaborate plan of the atom and then *proceeds critically to erase each detail in turn.*
>
> *What is left is the atom of modern physics!*
>
> I want to explain that if the erasure is carefully carried out, our conception of the atom need not become entirely blank. *There is not enough left to form a picture;* but *something is left for the mathematicians to work on.* [Italics mine—J.S.B.][7]

What is that "something that is left for the mathematicians to work on"? I see it as the abstract residue of the experience of drawing a word picture of the atom and then saying: "This picture is not it! Jump off from this picture to whatever-it-means-that-cannot-be-put-in-a-picture. Take away the picture, but keep the message."

Similarly, Picasso could tell you about his Guernica: "This is not what happened. Jump off from this painting to whatever-it-means-that-cannot-be-put-in-a-painting. Forget the painting as a picture of any particular event, but keep the message."

THE MESSAGE, the mysterious core of meaning-value that the artist wraps up in a written paragraph, in a color composition, in a sound arrangement, this is what counts. Once you have abstracted such a message in one art form, nothing prevents you from transferring your new skill to other art forms, including mathematics.

There is a passage in *Alice in Wonderland* that comes to my mind while I ponder over these matters.

> This time [the Cheshire cat] vanished quite slowly, beginning with the end of the tail, and ending with the grin, which remained some time after the rest of it had gone. "Well! I've often seen a cat without a grin," thought Alice; "but a grin without a cat! It's the most curious thing I ever saw in all my life."[8]

Of course, we never saw—in our world of sense perception—a grin without a cat's face to support it. It takes a jump into the immaterial world of abstraction to perceive the grin floating in the air. If you put the Cheshire cat's incident side by side with the following statement of Arthur S. Eddington, you may find a parallel.

> We must seek a knowledge which is neither of actors nor of actions. . . . The knowledge which we acquire is *knowledge of a structure of pattern contained in the action.* I think that the artists may partly understand what I mean. [Italics mine—J.S.B.][9]

In other words, the structure of the grin without the cat that does the grinning, the structure of the disembodied happening in its pure state.

Have you ever tried to picture to yourself a pure happening, independent of what happens? We have no word that I know to express it. I read somewhere that the phrase *set of operations* is acceptable to scientists. They speak of *dynamic interlocking of sets.* All this is good, as far as it goes. Personally, I like to think of it by doing violence to grammar. I make a noun of an adverb, and I say to myself that the structure of the grin without the cat that does the grinning, without the act of grinning itself, is a pure *how.* By looking at these *hows* exchanging their energy in dynamic space-time patterns, I get a thrill that I cannot describe any further.

UNTIL we have found a better analogy, it seems to me that the term *field of energy* is helpful. It brings to mind a simple experiment familiar to most of us. You remember the classroom demonstration of the magnetic field, don't you? You sprinkle some steel filings in a cardboard; you hold the cardboard on top of a magnet, and you shake it a bit. The filings arrange themselves in curvy lines that form a definite design. They show the pattern of invisible forces that fill the magnetic field. Now, in your mind, take away the steel filings, the cardboard, and the magnet. You are left with the abstract *field of forces,* the grin without the cat. The significant jump is right here. Of course, you can picture to yourself a magnetic field without a magnet; you can speak of a grin without a cat. But you know very well that in the "real" world there are no fields of energy, no sets of operations, no *hows* dangling by themselves without any support.

This is exactly where you make your mistake, according to our friends, the wizards of mathematics. What you take for permanent and tangible—the magnet, the cardboard, the steel filings, the Cheshire cat—they see as fields of energy, as whirling sets of operations that interlock in the complex manifold of activity.

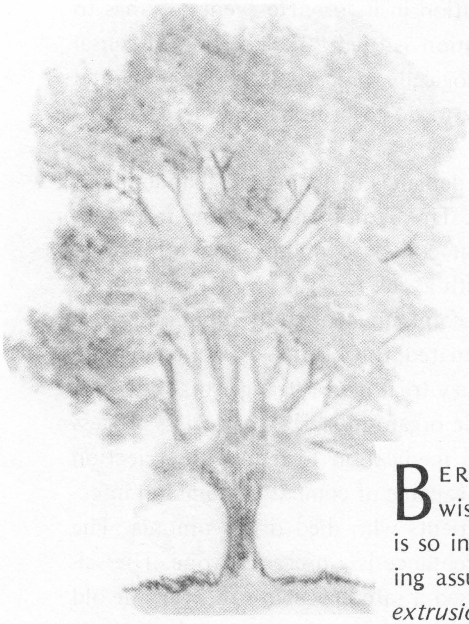
When I look at mathematics in the light of my experience with other arts, I am not awed any more by its techniques. Mathematizing becomes for me a human experience that has a great deal in common with other experiences that are not given equal credit for their share in human advancement.

This abstract of art of mathematics has brought about in quick succession the atomic age and the space age. By what transfer of skill can we pass from the art of mathematizing to an equally effective art of living? We may do so by reversing the orders of realities with which we deal. In the world of primitive man, stones, plants, and animals were the realities he had to take into account in order to survive. These $\text{realities}_1$ were raised to the level of $\text{realities}_2$ when men invented abstract classifications they thought revealed to them the real nature of things. Later, they enriched the $reality_2$ of classifications by adding to it the reality of "laws of nature," or $reality_3$. But, during all that time, poets, artists, mystics, and dreamers were fascinated by a $reality_4$, a realm of existence preternatural, beyond nature as known at that age. We are now fashioning the key of the door that opens for us that world of wonders. We discover that from that world flows a form of human energy: the energy of values we hold supreme and the energy of scientific knowledge that gave us the control of the very heart of matter.

What if we took this $reality_4$ as a more immediate reality than $realities_1$, $_2$, or $_3$ to which our predecessors were limited?

## NOTES

1. J. Samuel Bois, *Breeds of Men* (New York: Harper & Row, 1970), pp. 64–101.
2. A reader familiar with the current literature on general semantics knows where to find these mental instruments. *The Art of Awareness* by the author, a textbook soon to appear in its second edition, revised and enlarged (Dubuque, Iowa: Wm. C. Brown), is probably the most compact set of these mental tools.
3. John Canaday, *Metropolitan Seminars in Art* (New York: The Metropolitan Museum of Art, 1958). Thirteen volumes with detached color plates and black and white illustrations in the text.
4. Canaday, vol. 1, p. 7.
5. Canaday, vol. 1, p. 13.
6. T. C. Mits is an acronym made of the first letters of The Celebrated Man In The Street. See Lieber and Lieber, *The Education of T. C. Mits* (New York: Norton, 1942).
7. Arthur S. Eddington, "The Theory of Groups," in *The World of Mathematics,* ed. James R. Newman (New York: Simon and Schuster, 1956), p. 1560.
8. Lewis Carroll, *Alice in Wonderland* (New York: The Modern Library), p. 88.
9. Eddington, p. 1559.



# 9. Causality

BERTRAND RUSSELL once wrote: "I wish to maintain that the word 'cause' is so inextricably bound up with misleading assumptions as to make its *complete extrusion* from the philosophical vocabulary desirable. . . . *The law of causality,* I believe, like much that passes muster among philosophers, *is a relic of bygone ages."*[1] [Italics mine—J.S.B.]

The present chapter is designed to help the reader internalize the notion that Russell expresses so clearly and so definitely. If we really want to find out for ourselves whether his views on causality are acceptable or not, we have to take them in earnest and give them an honest trial. Otherwise, we simply register his statement and continue thinking about causality as we did before. This is what Herbert Feigl did in the same book in which Russell's dissertation appeared, in a chapter immediately following. Instead of pressing causality out of the philosophical vocabulary, Feigl suggests a "purified" concept defined in terms of "predictability according to a law." He states his viewpoint as follows: "The terms 'cause' and 'effect' of ordinary language need not be rejected if proper caution is employed in their application."[2]

I take this as a typical case where a new formulation is nullified by leaving it inserted in an old scheme of thinking that is alien to the suggested epistemic innovation. Instead of extruding causality because it is "bound up with misleading assumptions," as Russell sees it, Feigl contents himself with demanding caution in its use. He eventually has to admit that even when proper caution is used "the assertion of causal relations . . . is often methodologically precarious."[3] What mental acrobatics! What are we not ready to do to preserve the sacredness of common-sense language?

The korzybskian methodology demands the complete abandonment of common-sense thinking-feeling. This is not easy, I know from personal experience. The analogy that comes to mind is that of a heart transplant operation. A patient with a sick heart is given a new one to replace the old one, which has become unequal to its function. For a short while the patient feels rejuvenated. But his tissues cannot tolerate the presence of the new organ. They treat it as a stranger that does not belong among them, and the whole organism starts a relentless process of rejection. If the physician uses medication to reduce the rejection power, he makes the organism less capable of combating common infection, and we know of several patients who died of pneumonia. The balance between rejection and acceptance is a precarious one. The science of medicine has not yet devised a safe procedure to keep the old and the new working harmoniously together for the good of the patient.

IN THE CASE of a new key notion implanted into our semantic make-up to replace one that is no longer adequate to the present conditions, a similar rejection is bound to take place. The trouble is not that the new notion is not a healthy one. It is that its introduction in the semantic organism creates a vital disturbance that might imperil the very sanity of the person who takes the risk of the mental transplant. In fact, psychologists are just beginning to discover that certain cases of schizophrenia may be due to such crises of sudden and unexpected changes in the growth process. At the present stage of our knowledge, it requires a consummate skill in self-management to turn these mental transplant operations into successful experiences.

In the normal development of our culture, it takes two or three generations for key notions, imbedded at the very heart of our structured unconscious, to undergo a complete change and to be accepted generally. The trouble is that we do not live any longer in what was considered a normal time a few generations ago. The acceleration of cultural transformation is increasing at a frightening rate. Successive generations live in widely distant worlds; confrontations between blacks and whites achieve little but to freeze differences of attitudes and values; the terms *brother* and *sister* are still limited to cultural relatives and not yet applied to all members of the family of all men. We have to devise ways and means of shortening the time required for a thorough-going semantic metamorphosis. It has become a *sine qua non* condition of our survival.

The French physicist, Leon Brillouin, does not hesitate to call for a surgery of the mind, however cruel it may be.[4]

Another French scientist-philosopher, Gaston Bachelard, has proposed a less-drastic method of taking out of our system the vestigial remains of a bygone age. Instead of mental surgery, he suggests a procedure patterned after psychoanalysis. He sees the key notions of our structured unconscious as insertions that were helpful at a time and that keep being transmitted from one generation to the next beyond the point of their usefulness. The proper technique is to analyze as many such notions as we can, until the whole cultural unconscious is free from retarding conditionings.

BACHELARD's original scheme and my own development of it were described at length in my previous books, *Explorations in Awareness* (pp. 108–115) and *The Art of Awareness* (pp. 122–132), and they serve as the theoretical background of *Breeds of Men.* These methods make it possible not only to extrude obsolete notions one by one but also to make a person aware of what stage of overall development he has reached, compared to that of our Western culture as it manifested itself in four distinct periods: (1) the primitive era prior to the Greek philosophers, (2) the many centuries, including the Middle Ages, when the aristotelian categories prevailed, (3) the classical scientific age that lasted until the beginning of this century, and (4) the age of the relativistic orientation common to the most creative minds of the present time. In this way, the prescription to be modern and up-to-date becomes a clear and definite directive. In the case of the notion of causality and of all others, it means to pattern our thinking methods after those of the most progressive scientists, philosophers, and artists of our own generation.

At stage one, the primitive stage prior to the advent of Greek philosophy, our ancestors lived in what Ernst Cassirer calls the world of myth.[5]

> The world of myth is a dramatic world—a world of actions, of forces, of conflicting powers. In every phenomenon of nature it sees the collision of these powers. Mythical perception is always impregnated with these emotional qualities.
>
> The real substratum of myth is not a substratum of thought but of feeling.

At this level, causality, or the relation cause-effect, is magical, mysterious, ruled by the whims of the gods in classical mythology, or, in the modern version, depending on luck, astral influences, the power of charms and fetishes, ritual blessings, or the irresistable power of the mood in which one happens to be.

You may be using a highly sophisticated technology, including computers, Xerox duplicators, teleprinters, and satellites for transcontinental communication, and yet remain as primitive as the caveman with his rough stone tools or the pre-Columbian potentate who offered in sacrifive to the gods the finest specimens of his nation's youth. You live in what Cassirer describes as a world "of forces and conflicting powers"; you crush all opposition under bombing raids when the enemy you have marked for destruction is a tiny nation; or you heighten an expensive wall of atomic deterrence when he is of a size comparable to yours. The strength of your feelings of fear and of your conviction of self-righteousness is the measure of the reality of the conflict you accept as the human condition. If what you do fails to produce the results you anticipate, for instance when a small nation refuses to be crushed into nothingness or when a resourceful competitor in malevolence checkmates you in death-dealing inventions, you take their "stubbornness" and "perversity" as the only cause of the whole trouble. You then appeal to blinder feelings of national pride and omnipotent self-reliance to redouble your efforts at destruction, forcing the whole of humankind to share a terror-fraught doom.

IN THE WORLD of the primitive, men had not yet begun to think. They were still creatures that obeyed blindly a new kind of instinct with which their animal forebearers never had to contend, the instinct of mutual rivalry and destruction directed at members of their own species. They did not even think of asking themselves what was the origin or the cause of their mad frenzy. Causality had not been invented;

Fate, blind and inexorable, was running the whole universe and every single event of their own life.

With the appearance of reason at the time of the first Greek philosophers, causality was born in the human mind. It was a simple affair. It gave credit for what happened to whatever feature of the situation was most easily perceived by the senses unaided. The wind pushed against the sails stretched in front of it. It was not pulled, as the weather theorist saw it later on, by the vacuity created in the low of a rotating cyclone. You only had to extend your arm to feel the pressure of the air against your hand. And today, we still say that the wind "blows."

Here is a human situation: the Sabines running away from their Roman captors. Look! You cannot miss seeing those vigorous males actively chasing the passive maidens; they seem the real cause of their fear and flight. Are they really? What if the pursued slow down under the subconscious impulsive desire to be held in the vise of strong arms and filled with the surging wave of millions of spermatozoids that will contend within their innards for the privilege of stirring into life an expectant ovum? This might well be another way of looking at what is actually happening.

Smoke has no weight and it lifts itself up by nature to the empyrean reaches of the firmament, its place of abode. You can see it as it climbs relentlessly from the humidity of the cold ground to the bright and dry regions of the heavenly fire. A time will come when inventive and daring men will harness smoke to lift their aerostatic globes and make them float with the clouds. Thus was invented the balloon, father of the dirigible. Another way of looking at it is that the lifting power was due to another factor, invisible to the human eye, which broke the balance between the two measurable pulls of gravitation and freed the aerostatic globe from its unseen moorings to the earth.

AT STAGE TWO, when aristotelian categories prevailed, causality accounts for the properties of things, for the permanent manifestations of their nature. Fire burns, water flows, birds fly, lions roar, fish swim, men think and talk. The universe is filled with persons, animals, plants, and things, each of which holds a definite place in the hierarchy of existence and behaves as directed by its nature. When men think and name what they see, hear, or touch, they describe their true nature, as

Adam did when he named animals at the behest of God, their Creator and his.

As men spread their knowledge to more and more complex phenomena, they detected a predictable interaction among the various natural objects, alive or material, that participate in an event (stage three, the classical scientific age). This is when they invented the construct of multiple causality, of what Feigl, cited above, called "predictability according to a law." The law was "the law of nature," different from human laws, always obeyed faithfully, except, of course, when "exceptions" peeped through the network of invariants, supposedly to confirm the law they were breaking. Causality became the study of trends, or of *trendings* as Buckminster Fuller likes to put it, using a verb so as to endow static nature with a certain amount of dynamism, turning the monumental hierarchy of natures into a huge machine that Newton, Laplace, and the rest of them saw as the real image of the universe. The highest achievement of this notion of multiple causality is the computer. It has refined predictability to the capacity of pinpointing accurately the place of landing of a spacecraft that has lifted itself from a moving and rotating earth to a precise location on a moving and rotating moon.

AT STAGE FOUR, the age of the relativistic orientation, the notion of causality, single or multiple, is altogether discarded as a workable construct with which to deal with the relations men establish, mentally and empirically, between themselves and the totality of the cosmic system or any of its subsystems, including men. The "infinity" of point-events between the antecedent and its consequent, between the cluster of "causes" and the cluster of "effects," leaves a limitless gap where an "infinity" of possibilities may find room. Moreover, we accept a creative activity that belongs to the very essence of every occasion. In other words, unforeseen and unforeseeable possibilities emerge by sheer immanence. To quote Alfred North Whitehead:

> How can an event be the cause of another? In the first place, no event can be wholly and solely the cause of another event. The whole antecedent world conspires to produce a new occasion. But some one occasion in an important way may condition the formation of a successor.[6]

Trends and trendings, scientifically established or not, disappear as indicators of what is to come. Lewis Mumford gave a vivid example of this in the following statements:

> In the third century A.D., an objective observer might well have predicted, on the basis of the imperial public works program, an increase in the number of baths, gladiatorial arenas, garrison towns, and aqueducts. But he could have had no anticipation of the real future, which was the product of a deep subjective rejection of the whole classic way of life and so moved not merely away from it but in the opposite direction. Within three centuries the frontier garrisons were withdrawn, the Roman baths were closed, and some of the great Roman buildings were either being used as Christian churches or treated as quarries for building new structures.[7]

WHAT IS LEFT to replace the old concept of causality? This is where we have to be careful. If we simply replace a word by another that sounds more modern, we fail completely in our attempt to bring our episteme up to date. We may have broken the shell of the old concept, but we have retained the meat that was inside. We have left the old notion intact and holding its former place in the context of all other notions. We have attempted to change the outward appearance of a single item without disturbing the overall structure of our cultural and personal unconscious. It is a change without transformation, a rose under another name, as Shakespeare saw it generations ago. The rose smells just the same, and the cause-effect link remains identical with its former self.

It takes much more than that to replace an outdated episteme with a new, relevant one. We have to dismantle our familiar world and let it return to what will appear to us as the primeval chaos. Then let us chop it anew with freely invented units of discourse, with multidimensional quanta that move and dance in the void of our ignorance. Let us soar well above any visualization of these quanta, in the realm of pure abstraction and merge our very existence with the pulsating fluidity of what keeps becoming without rest.

I speak here of a stage-five experience, which becomes the referent for our stage-four formulations, as stage-one immersion in the world of magic is the referent of stage-two classifications. Both extreme stages have in common that they belong to the nonverbal world, out of which our discursiveness emerges whenever we talk to ourselves, which means thinking, or whenever we talk to others, which means theorizing or philosophizing.

AFTER THIS EXCURSION into the world of formless existence, we may now come back to the metaphysical world of categories and mental models and then to the verbal world of nouns, adjectives, verbs, and adverbs, using these as ghostly tools to build a world in which to live with our fellow humans who still imagine that such a world has the tightly woven texture of objective reality. Whitehead's statement, quoted above, is a good sample of what we might accept, at the present stage of our knowledge, as a satisfactory replacement of the obsolete construct *cause-effect* or *causality.* It limits itself to asserting a sequence observed from a before and an after: "The whole antecedent world conspires to produce a new occasion." To determine what element of the antecedent has "caused" what element of the consequent is a matter of plain guessing. When our guessing is successful, we claim to have discovered the cause. When we have been successful many times about what we consider similar occasions, we proclaim that we have brought into the clear a "law of nature," or an invariant under transformation.

Finally, we may play with the sequence *cause-effect* and its alternate *effect-cause* when we want to describe a transaction. This is when two agents appear to influence each other's functioning in reciprocal feedback. Some will speak of circular causality; some will say that new situations, of which each agent is an aspect, emerge from transactions that take place one after the other.

## NOTES

1. Bertrand Russell, "The Notion of Cause," quoted in *Readings in the Philosophy of Science,* ed. Herbert Feigl and May Brodbeck (New York: Appleton-Century-Crofts, 1953), p. 387.
2. Herbert Feigl, *Readings in the Philosophy of Science,* ibid. p. 410.
3. Feigl, p. 410.
4. Leon Brillouin, *Scientific Uncertainty and Information* (New York: Academic Press, 1964), p. 52.

5. Ernst Cassirer, *An Essay on Man* (Garden City, N.Y.: Doubleday, 1953), p. 102.
6. Alfred North Whitehead, from his lecture "Nature Alive," quoted in Morton White, *The Age of Analysis* (New York: Mentor, 1955), p. 96. I recommend the whole lecture.
7. Lewis Mumford, "Prospect," in *Man's Role in Changing the Face of the Earth*, ed. L. Thomas (Chicago: University of Chicago Press, 1956), p. 1142.

# 10. The Self

THE WORD *self* is a key term in our vocabulary. Whether we use the pronoun *I* or *me,* or the more sophisticated expression *ego,* we are referring to the very core of our own person and the center of our individual world. At the sensory level, our self is the hub of our physical environment. When I walk through a landscape, I displace its center as I move. There is a similar phenomenon in my mental world: I stand at the center of my space-time field of experiences. Some of these are very much alive and close to this center; some are dim and distant. Some have been there for many years, some crowd the present; some stand at the border of the future, welcoming, puzzling, or threatening.

A great deal of my behavior is determined by the manner in which I see myself—by my self-image, as they say. I may picture my dealings with other people as an encounter of self-images, each participant playing a part consistent with his personality, talents, skills, and purposes.

My self-image is a mental construct, built bit by bit in the course of my life. It may have been practically unchanged for years, gradually assuming a definite shape as I discovered myself and asserted my identity. Or it may have been transformed to the point of being hardly recognizable when some overwhelming experience transformed its inner structure into a different one. This self has lived in many environments—environments made of people, things, practices, and values. First there was my family: father, mother, brothers, sisters, with uncles, aunts, and cousins on the periphery and friends and acquaintances on the edges of the field. Later there was the environment of school and college, of my companions in study and play; of my coworkers in various jobs; of the stabilized condition of married life; of the established business and profession; and later my entrance into the world of retirement.

There are many ways of looking at our self. We may see it as the never-resting *ego* that Freud put between the *id* and the *superego*, working hard to reconcile their discordant purposes. It may be the person-in-becoming that Goldstein, Maslow, Rogers, and the humanistic psychologists see reaching for self-actualization. It may be Karl Jung's conceptualized *self* who emerges from the misty background of the collective unconscious as he sharpens the features of his individuation. It may be the time-binder of Korzybski, enriching itself with the cumulative wisdom of the past and transmitting to the coming generation the inheritance of a culture he has made more complex. It may be the active member of the convergent noosphere that Teilhard de Chardin describes as humankind on the march toward an omega point of final centration. All these versions have a meaning for me. Each of these views, as I understand them, and a few others of which I am dimly conscious, have entered the unique makeup of my own identity.

WHEN I want to give a definite pattern to the various constructs of myself, which dominated my inner world in years past and rival with one another in determining my behavior at the moment, I like to use the epistemological profile that I found in Gaston Bachelard's writings and developed in my own way.

At the sensing stage, my self-image is mainly an awareness of my physical appearance, a concern about what I look like for those with whom I meet and live. It is an identification of what I am with the suit or uniform that I wear, with the way I am groomed, with the symbols of social status I feel I should display when I want to show off.

A picture is taken of a group that includes you. When you are shown the picture for the first time, which person are you looking for, first of all? Yourself, of course. This is concern for your self-image at the sensing stage.

The way you dress for formal occasions makes you feel more comfortable. Whatever your views of the Establishment, you take its directives into account when it comes to what is proper to wear, what is proper to do in different situations. The hippies obey the same self-image when they change the symbols of their social standing: they insist on letting their hair grow, they cultivate a beard, they wear clothes that proclaim their disregard of standard conventions. A similar mechanism is at work in the bishop with his mitre and crozier, the general with his stars and decorations, the sergeant with his stripes, the woman with her hairdo and eyeshadows, the monk with his cowl, the nun with her veil, the nurse with her cap, the judge with his gown, the priest with his vestments, and Miss America with her chest, girth, and hip measurements.

This is the view of self that makes possible the industry of cosmetics, of weight reducing studios and spas; of fashion in maxi, midi, and mini dresses; of bikinis and gossamer lingerie; of men's present return to the fancy accoutrements of the ages of kings and their courts. It is the self of oldsters who do not want to look their age, of the little girl who proudly parades in her mother's dress and shoes. It is the self transformed by plastic surgery, the self of the sailor with his tattoos, the self of the shorty who stretches to look tall, of the bald one who wears a toupee, of the deaf who claims he does not need a hearing aid. It is the self of masculine sexual potency, of feminine penis envy, the self that emphasizes body characteristics, the self of the boxer, the self of the ballerina.

AT STAGE TWO, the feeling of self-identity goes deeper, to the sensitive core of a personality made conscious of the class to which it belongs. For instance, it is the self that identifies itself with a profession. "You know, we in show biz (we musicians, we psychologists, we psychiatrists, etc.) see things thus and so, do things thus and so." It is the self described in the *Who's Who,* the self introduced to an audience before a lecture, the self whose status in the academic world is determined by his degrees or his standing on the professorial ladder, the self who can boast of some well-known award. It is the self of the V.I.P. in the business world. In a general way, it is the self that expects recognition because of his position, title, status; the self belonging to a caste that has a definite place in the hierarchy of the culture. It is the self that sociologists identify with socioeconomic status, with age groups, or with political parties.

This self took shape early in our world of competition, at school with the grades and the report cards, at work with the ratings of performance on the job, all through life with the car we drive, with the clubs to which we belong, with the section of the city where our residence is located.

If you deface that self-image, you may become guilt-ridden because you have failed to measure up to certain standards of performance or morality; when others fail to recognize its excellence or when they criticize it, you may become self-defensive. It is the self that identifies itself with its own activities: the author with his articles or his books, the housewife with the neatness of her kitchen, the public official with the record of his department, the attorney with the cases he has won, the business executive with the increasing percentages of profits he can show, the member of the 4-H Club with the ribbons he has won at the county fair.

MANY of the characteristics of the self at stages one and two have a value that I never meant to ignore or belittle. A proper concern for one's outward appearance is a stage-one reaction that has its place in a well-balanced mode of living. A healthy competitive spirit and a respect for self-recognition, as symptoms of stage-two, are quite acceptable as forms of motivation. The trouble is that some people take these as the main supports of their ego strength. Their self-esteem takes its source in values that are not the main constituents of their excellence; their life of feeling, ambition, and self-evaluation is limited to a restricted environment. They do not see themselves against the broader and richer background of the historical-geographic world of the entire family of mankind, still less against the limitless cosmic process, viewed in all its extension. The broader the background, the more realistic the view of the self. Great men have learned to live in this broader perspective. The authors of our Constitution wrote it against the background of centuries of political history. Towering geniuses and leaders of nations dominate the landscape of human existence seen as a stage where men have appeared and disappeared, leaving after them a part of themselves stabilized and continued in institutions, works of art, movement of ideas, and increased powers of humanizing energies that make the world what it is. This broad view—stretching through centuries, from the appearance of hominids to the present time—gives us the full background against which each individual and each group of individuals eventually will be evaluated.

Below this overarching cosmic view, the number of different cultures and of culturally determined patterns of selfhood is practically limitless. The self admired in the new countries that are emerging on the scene of the United Nations Assembly is expressed in national costumes that strike us with their bold designs and vivid colors in the midst of the neutral garb of Western conventional appearance. It is $\text{self}_2$ displaying itself in the manner of $\text{self}_1$.

WHEN the awareness of the distinct self mutates into the consciousness of relationships with fellow humans, we pass to stage three. This is the relating stage. The self ceases to be the focus of our attention; it is seen as a mere element of a greater whole to which it belongs. This greater whole may be the family, and a person may remain fixated in the role he once had in the family unit. This is the case of the mother who still thinks of her adult son as one who needs her protection —and who should return his childlike love—as he did when he was a baby in arms. It is the case of the adult who remains a child and seeks the security of a father-image—or a mother-image—to whom he can relate in times of stress. This may be sublimated into a religious attitude of Psalm 23, "The Lord is my shepherd." It may be translated into loyalty to one's buddies in a platoon on the war front, into the willingness to share the fate of fellow unionists in a strike or lockout, into the readiness to stand with one's political party, ethnic group, or revolutionary cell.

It is the self seen as a node of relations, as a knot in the network of give-and-take responsibilities and benefits. Depending on the extent of that network in space and time, the self assumes a solidarity with a limited fraction or with the totality of the family of man.

The stage-three self-image is also the construct of the self as made of many elements or, better said, as having many aspects or dimensions. It is the self of human beings described as semantic transactors, as bundles of thinking, feeling, self-moving, and electrochemical activities in continuous transaction with a space-time environment. Taken all together, these selves form the noosphere, the conscious tegument of the planet humanized.

It is also the self seen as a multiordinal hierarchy of $\text{self}_1$, $\text{self}_2$, $\text{self}_3$ . . . $\text{self}_n$, conscious, conscious of its consciousness, self-reflexive, and managing itself according to the knowledge it has received from previous generations and from his own experiences. It is not the self of stage two, endowed with a nature that does not change, or member of a class that fixates him in a permanent role. It is a self in movement, both dependent and autonomous, playing a part that is unique in the drama of humankind on the march. It is the adult, self-actualized and fully functioning person with whom humanistic psychologists are concerned.

It is the self that has the same amplitude as the world in which a person lives. It includes both the unconscious and the conscious; it extends in space and in time independently of the objective measurement of years or miles. It is the world-self I described years ago:

> In a sense I can say that my world began with me, it grew in size and complexity as I grew in experience. . . . Within this unit that I describe as "myself-and-my-world," many things happen of which I am not conscious. For instance, I do not perceive the chemical exchanges that take place in my endocrine glands nor the electrical discharges that fire my brain cells. I know nothing of how the cosmic rays may, perhaps, influence my behavior. Until Freud came along, few people took into account the phenomena that he singled out and labeled "abreaction," "complexes," and "libido." Until I read Korzybski, I took my language for granted, for something that required no study, no sophisticated awareness. As I go on making discoveries within my world, I am really enriching that world out of the resources of my own creativeness set into motion by the impact of other "Smith-worlds."
>
> My self and my world are one. Your self and your world are one. When I penetrate into your world, as I am doing now, I become subject to the climate of your world, to its laws, to its traditions. In your world things do not necessarily happen as they do in mine. My semantic reactions may fire one another into a pattern that has very little resemblance to the fireworks that create insights within you. . . . In the free flight of his creative imagination, the poet does better than the scientist in his pedestrian explorations. Walt Whitman wrote, for instance:
>
> There was a child went forth every day,
> And the first object he look'd upon, that object he became,

> And that object became part of him for the day or a certain
> part of the day,
> Or for many years or stretching cycles of years.
>
> . . . . .
>
> These became part of that child who went forth every day,
> and who now goes and will always go forth every day.

> Coming back to the laborious discursive style of ordinary language, let us take our self and our world as two descriptive aspects of a totality, of a universe that is as unique as each individual Smith is unique. . . . We may also use this frame of reference to observe the development of Smith, from *Homo sapiens* to our twentieth century. Within their life span, the Smiths of today become much more powerful centers of cosmic energy than the Smiths of the Stone Age. Their worlds quickly grow to dimensions that are simply fantastic. We belong to this generation of privileged Smiths.[1]

This self-world, or world-self, may be perceived at times in the flash of a stage-five experience, as we can see the landscape in a stormy night when a flash of lightning fills it suddenly with a glaring light.

This experience has been called different names. It is the *satori* of Zen, the *samadhi* of Hinduism, the full union of the Western mystic, the exclamation "I am God," of which Schroedinger speaks in his epilogue to *What Is Life.*[2] Once the flash has passed, the old limited self, commensurate with sensory experience and discursive knowledge, takes over and resumes its dominance of our behavior. It takes training at stage four to shake off that view of the self and replace it with a creation of our own.

AT STAGE FOUR, the mental construct of self, as any other notion, is seen for what it is, a man-made product of human ingenuity. It is a creation of some human being, or of a group of human beings, no different from us; it is a fabricated tool, which we accept to use when we deal with ourselves.

At stage three we took it as an objective "map" of a definite territory. At stage four, we are aware that there are many such maps, and we feel free to choose whatever suits our purpose of the moment. It is like the maps of the whole country. There are road maps to travel by automobile, railroad maps when we take the train, air travel maps when we fly. All refers to the same territory, but each limits itself to features that are relevant to a special purpose. Similarly I may take the Freudian map of the self with its abiding libido, the Jungian map of the ego surrounded with an area of consciousness on the surface of a spherical totality, of which the self is the center. I may play with the multiordinal self$_1$, self$_2$, and self$_3$ of general semantics epistemology, or with the semantic transactor map where overlapping activities are gathered in a central assembly imagined by Sylvan Tomkins. I can accept myself as made of many selves, consistent or inconsistent with one another, and I can say without embarrassment: You say I contradict myself. Yes, indeed, I contradict myself. So, what?

AT THIS STAGE contradictions or widely divergent descriptions are of no concern. All views are accepted, since none can reach the full truth of what "really" is. At this level, we had better leave the pedestrian language of prose and listen to Walt Whitman:

> That which eludes this verse and any verse,
> Unheard by sharpest ear, unform'd in clearest eye
>     or cunningest mind,
>
> . . . . . .
>
> Which you and I and all pursuing ever ever miss
> Open but still a secret, the real of the real, an illusion,
> Costless, vouchsafed to each, yet never man the owner,
> Which poets vainly seek to put in rhyme, historians in prose,
> Which sculptor never chisel'd, nor painter painted,
> Which vocalist never sung, nor orator nor actor
>     never utter'd . . .[3]

Stage four gives me more freedom still. It opens wide the doors of the world of creativity, where I can bring into existence a so-far-unseen construct of the self, which I feel has been waiting for generations for a chance to emerge into the world of discursive postulation.

New constructs of the self have been dimly perceived in the starry sky of our inner world, not only by poets like John Donne, who asserted that "No man is an island," but also by perceptive scientists of our day and age. In a chapter entitled "The Skeptical Psychologist," Gardner Murphy wrote:

> The belief in immutable selfhood has, like other beliefs, an intelligible origin; life in our culture requires this emphasis. . . . Though Lewin's field theory speaks properly of the melting of individual and environment, it fails to bring out with full force the melting of individuals into one another. The doctrine is frightening, for the coercions men have imposed upon one another . . . have led to frantic defensive efforts against the loss of individuality almost like those of the drowning man or the claustrophobic. . . . Psychology has explored by systematic methods only a few aspects of the deeper interindividual unity that is a phase of the man-cosmos unity.[4]

When the psychologist, held down by the shackles of his discipline, cannot roam freely to survey the field of human potentialities, the postulator-dreamer dares soar on the wings of his verse and describe what he sees in the distance. He sees on the horizon, in the dawn of a new age, a new kind of *Homo sapiens* emerging in warm beauty out of the ceaseless evolutionary process.

The advent of man
did not mean
that something was merely added
to animal nature
to enrich it
with reason and self-awareness.

It was the birth
of a new form of life
emerging,
once its time had come,
out of a lower form
and displaying characteristics and qualities
that had never existed before.

In a similar manner,
the couple unified in love abiding
is not simply a phenomenon
that merely adds to the individual life
of a man and a woman
something pleasant to experience
and beautiful to behold.

It is the birth
of a new kind
of *Homo sapiens*
emerging in holistic duality,
man-woman and woman-man,
bound together
in a transcending superself
so far unmanifest
in its symbiotic oneness.

They are endowed
with the vital capacity
of being actively at-one with each other
at a transverbal affective level
where clashes of opinion
and differences of attitudes
cannot reach
and create disturbances.

This emergence is the cumulative result
of the evolutionary urge
that has been working its advances
through generations of men and women
who loved beauty
and accepted tenderness
as their style of living.

It is like the flowering,
now that the time has come,
of the color and perfume
hidden for ages
within the moving sap
of mankind
growing beyond
individual self-actualization.

When a couple
consciously lives
at this level
of transhumanness,
it becomes

the ripening fruit
of the present evolutionary season
prepared by centuries
of human development,
now that humankind
is beginning to display signs
of impending maturity.

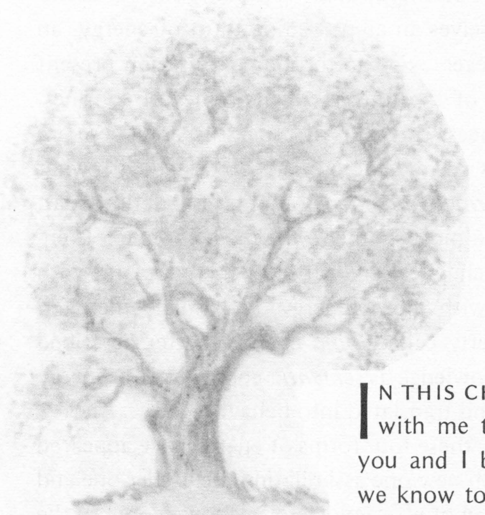
To be aware of this
is to hasten
the coming of a new world,
where the noosphere
held together
by the knowledge of our common fate,
will be transformed
into a *philo*sphere,
or a living network
of felt togetherness,
permeated with a loving acceptance
of one another
in joint gratification
and mutual enrichment.

THE TRANSLOGICAL dynamic organization of the human world belongs here. Mankind can now be seen as a flexibly structured process-in-becoming within a more inclusive process of cosmic evolution. The uniqueness of the individual as a nonrepeatable space-time event is absorbed in the synergistic uniqueness of the couple aware of its function in the ongoing transformation. From the couple, the art of man-designed togetherness will spread to larger and larger units, including cultural groups and sovereign nations, until it becomes the fully enjoyed oneness of the *philosphere,* or humankind grown at last to the unity that makes it the ruling cluster of cosmic happenings.

## NOTES

1. J. Samuel Bois, *Explorations in Awareness* (New York: Harper & Row, 1957), pp. 91–93.
2. Erwin Schroedinger, *What Is Life?* (New York: MacMillan, 1945), p. 88.

3. Walt Whitman, "A Riddle Song," in Louis Untermeyer, *The Poetry and Prose of Walt Whitman* (New York: Simon and Schuster, 1949), p. 427.
4. Gardner Murphy, *Personality* (New York: Harper & Row, 1947), p. 422.



# 11. Energy

IN THIS CHAPTER I invite you to survey with me the empirical world to which you and I belong. It comprises whatever we know to exist, from the smallest atom to the largest galaxy. It is also the world of what goes on within ourselves as individuals and of what goes on within the family of man all over the planet, plus the world of our nonhuman environment, immediate and distant, the total world that stretches along the centuries as it unfolds itself and accumulates the results of what went on before.

According to our brothers who work in the science of nuclear physics, it is a world of processes that never stop, like the flow of a mighty river in which each single object is like an eddy that appears, maintains itself for a while, and eventually rejoins the current from which it has emerged. Some speakers speak of them as patterns that shape up and fade out, or like knots of energy vectors that are tied and untied in a field extending throughout the universe. Smaller patterns are assembled into large units, atoms into molecules, molecules into cells, cells into organisms, organisms into populations, populations into a biosphere made of plants and animals, and—in the case of human beings—into a noosphere, sensitive and aware of itself, that wraps up the planet in a network of thoughts, purposes, and values. These dynamic structures maintain themselves in a temporary invariance, as they express, each one in its turn, the self-renewing energy of the cosmos that brought them into existence.

It is on that special aspect of energy that we shall focus our attention. We may picture to ourselves an all-pervading form of energy, an ever-active "within" of whatever exists, a throbbing pulsation present everywhere, from the center of the universe to its remotest confines. It penetrates every single process or group of processes, and these are seen as materialization of this cosmic energy. It is possessed with what Lancelot Law Whyte calls a *formative tendency* that gives a definite pattern to each process, from the most simple to the most complex. It endows material elements with chemical and physical energy, plants with negentropic energy, animals with motor energy, and finally men and women with what was formerly called *mind* energy—better described at the present stage of our knowledge as *semantic* energy, or the energy of meaningfulness perceived and translated into behavior.

As far as we can figure out, these four forms of energy have appeared successively on our planet, each new one assimilating the earlier one and transforming it to a higher level of efficacy. Here again, we come to the overarching theme of evolution, which we perceive in whatever we observe and deal with.

I AM NOT an expert in any of the special sciences from which I derive my scheme of thinking, and I offer no apology for not being one. It may be that specialists in some of these fields will detect a lack of detailed information on my part, and, in some cases, inadequate or wrong information. This does not worry me, and it need not worry you either. As plain human beings of the last decades of this twentieth century, *Mits* and *Wits* as Lilian and Hugh Lieber called us in their unforgettable books,[1] we have absorbed a certain amount of the information to which our generation has been exposed, and we have developed an outlook on the world that is different from that of our ancestors. Willy-nilly, we had to become generalists in a world full of specialists who fill the air and the written media with their discordant views on what we are and what we someday are going to be. To keep our sanity, we have to make some sense of what we hear and read, and this means to become generalists. In desperation, whether the scholarly establishment gives us its blessing or not, we have to create new patterns of thought and new orders of values if we want to keep our heads above the polluted waters of the absurd, which flow out of the educational factories of assembly-line learnedness. The present book is an attempt to make of the common man a minimally informed generalist.

Energy as I mean it here is not a thing that you can see, measure, weigh, hear, or taste. Generations ago, it would have been put in the world of the invisible, the spiritual, the mysterious, or what have you. Today we accept it as a transsensory reality. We detect and measure its effects. We feel it with the totality of our organism. Energy as power to do and to resist may be taken as a workable notion for our present purpose.

THERE WAS A TIME, some 4.5 billion years ago or thereabout, when the only form of energy that held sway on the planet was chemical and physical. It is still present in the air and sea currents, in the crawling movements of the glaciers, in the solar wind and the shooting meteors, in the secular wearing down of mountains, in the accumulation of silt at the mouths of rivers, in the waterfalls and in the thunder, in the heat of the deserts and in the frozen masses of the polar ice, in the geological strata in which are buried mineral compounds from which we recently learned to snatch the power of the atomic bomb. We experience it in the spewings of volcanoes, the rumbling jolts of earthquakes, in the crushing power of tidal waves, in the destructive swirls of hurricanes.

Some of these forms of energy have been subdued and tamed. The energy of lightning has become our willing slave. But this change did not come about until a higher form of energy, the semantic energy of men, took over and mastered it to serve their purposes. Some of the phenomena that were taken as "acts of God" in former generations are now under men's management, at least in part. And we keep on surveying and measuring the field of physical energies in which we live. As a recent popular book puts it:

> To the ocean tides of Newton, latter-day physicists have added aerial tides raised in the atmosphere by both moon and sun, and even land tides, two or three inches high, raised in the rock of the earth's crust. To the earth's simple rotation they have added half a dozen wobbles and precessions. To visible sunlight and starlight

> they have added a whole spectrum of incoming cosmic energy: radio and infrared waves, ultraviolet, X and gamma rays, even cannon-balling motes of matter coming from stars which have exploded in the depths of space.[2]
>
> For a long time, these energies were thought to dissipate gradually and unavoidably because of a law of entropy which sounded the death knell of the universe. According to that theory, there must come a time when the solar system will level down to complete cold. Some scientists of that school put the end of the earth and of the sun at some 50 billion years from now. I fail to see why such speculations are of any immediate importance to us, members of a species that is just beginning its limited span of existence on the planet. In this realm of wild speculation, there are discordant voices: other astronomers "have evolved the 'steady state' theory—that new matter containing new usable energy is constantly being created in the voids of space between the stars and the galaxies."[3]

One thing seems evident. After billions of years during which chemical and physical energies had been alone to display their activity on the planet, a new form of energy made its appearance. Because it contradicts flatly the "laws" of entropy, some call it negative entropy, or negentropy. It is the energy of life.

A PLANT—whatever its size and the length of its existence as a distinct eddy of cosmic activity, from the microscopic virus to the giant sequoia—works as an open system, feeding on its environment and giving back to its environment enriching products and decaying wastes. It is passive only to the extent that it needs the proper conditions of time and place to start functioning. But let the environmental conditions reach a favorable balance and the seed will become an autonomous source of an energy clearly different from chemical bonding or physical interaction. The seed selects, grabs, and assimilates the chemical energies locked within its own substance and in the elements that surround it; it transforms them and brings them to a new level of power. Growing roots, still spongy with the sap that fills them and expands them, will break concrete walks under which they push their way.

The chemical energies that plants have transformed are stored away and preserved for future use. The wood of the trees is a compacted creation that blends at a new level of power the radiation from the sun and the minerals from the soil. When it is burned later, it will emit the light and the heat that has been stored in it by life energy.

In a forest fire, that energy spreads with a power that devours itself in an incandescent glow. When this power has been compressed for thousands of centuries in geological strata, it becomes coal, petroleum, or natural gas. Men have invented methods to harness that condensed energy of the sun and to use it in countless ways. Plants bottle up and preserve for future use forms of energy that, in their raw state, could not be utilized by beasts or men. In the hierarchy of cosmic processes, negentropy thus plays the role of an irreplaceable link between forms of energy too distant to join together in a fruitful marriage. Animals cannot digest the elemental chemicals in their raw state; they need plants to transform them into food. With vegetation, the energy of the cosmos assumes a beauty that did not exist before and a richness of products that prepares the next stage of evolution. It adorns the bare soil with the color of greening, the perfume of flowering, and the nourishing value of fruit and nut meat.

Plants introduced into the universe a degree of spontaneity that did not exist before. They have a certain degree of initiative, and they set themselves into action when conditions are right. But they remain rooted to the place where they came into existence. By themselves, they cannot move in space. In exceptional cases, their seeds are carried aloft by the wind, by running water, by the insects or the birds. Wherever these seeds fall on the ground, they may start a new cycle of existence. But they did not choose their new location.

WITH ANIMAL LIFE, a new form of energy appears. It is motor energy. After a period of plantlike growth, in the egg or in the womb, the young is born into a world where he soon learns to move about. He seeks and finds in space the food that ensures his survival and his growth. He has no roots that keep him attached to the spot where he emerged from the cosmic process.

The young bird soon flies out of the nest; the colt and the calf follow their mothers in the field and learn to feed on the grass; the cubs of the lioness are trained to stalk and catch the prey on which they will live. As soon as they are strong enough, the young whales and migratory birds move with the herd or the flock to regions better suited to their seasonal activities. Young animals play and romp for sheer enjoyment; dogs and seals learn to act on the stage; even the wildest of the wild will take some conditioning designed by men trainers. Their energy is an energy of movement, of exploring and exploiting the riches of a surround within their reach.

Unlike the parasites of the plant world, who remain attached to the stem on which they feed, animals and birds that feed on other living things seek and choose what they live on. Some—such as the birds, the beavers, the bees, and the ants—build constructions that make use of the chemical and physical properties of materials they find suitable. Members of various animal species gather together in groups, packs, hives, and colonies to achieve results that a single individual could not obtain by itself.

Once this moving form of energy appeared, the planet became a zoosphere, where sounds of significance filled the air: the singing of the birds; the chirping of the chicks; the mating call of the beasts; the bleating of the lambs; the roar of the lion, the tiger, or the bear; the vocal exchanges of the parrots and the mynah birds; the trampling of the ground under the hoofs of stampeding herds. This is the zoosphere, with its cacaphony of calls and responses, of sounds that express feelings understood by members of the species and by members of other species who share their environment. A new form of interaction, intangible but powerful, bridges physical distances between individuals, links some of them in pairs or in larger groups, builds invisible walls of strangeness between species that avoid one another. It makes possible an elemental form of communication, that of a presence projected around and felt by neighbors, of a mutual exchange of feelings and intentions. We are already far from chemical bonds and repulsions that demanded actual contact to become actions and reactions.

We are now coming to the human form of cosmic energy. It makes of the world of happenings a world of *happenings-meanings* and *meanings-happenings.*

Until the appearance of *Homo sapiens* on our planet, all reality consisted of events determined by the three forms of energy that had emerged in sequence, each new one absorbing the earlier one and bringing it to a higher level of efficiency, freedom, and complexity. From the interaction of chemical elements and the interplay of their physical masses, the cosmic process had passed to an organismic phase where distinct units of relatively autonomous activity had come into existence.

First, there were cells, and later, multicellular organisms, capable of maintaining themselves distinct from their environment and reproducing themselves in generation after generation. Millions of years later, new forms of energy made their appearance. To the coordinated centration of the plants, they added the power to move freely in space, exploiting for their own survival and enjoyment the two lower forms of energy that had preceded them on the planet. A dim consciousness began to direct the instinctive movements of these free-roaming organisms: they knew what to look for and they were able to learn from experience. As this energy of consciousness became more and more intense, it eventually burst into full introspective awareness. Teilhard de Chardin describes this period of intensifying awareness in a passage where poetry outrivals science.

> Everywhere the active phyletic lines grow warm with consciousness toward the summit. But in one well-marked region at the heart of the mammals, where the most powerful brains ever made by nature are to be found, they become red hot. And right at the heart of that glow burns a point of incandescence.
>
> We must not lose sight of that line crimsoned by the dawn. After thousands of years rising below the horizon, a flame bursts forth at a strictly localized point. Thought is born.[4]

When Pierre Teilhard describes the apparition of man as the rising of a brilliant sun on the horizon, he emphasizes only one aspect of the new form of energy that burst upon the world. It is the intellectual aspect. To stress it is quite in keeping with the century-old definition of our species: man is a rational animal, distinct from all previous growing and moving things because he has a mind that can think and reason.

I SUGGEST a broader and richer view of mankind emerging from the zoosphere. The thought that was born at that eventful moment goes with a capacity to sense what lower forms of life were never able to perceive. It is that sense of values, of "what-I-mean-to-myself-and-what-the-world-means-to-me," that makes our own species endowed with a "nature" that it shares with no other form of life. This is what I mean when I say that semantic energy, or energy of significance, manifested itself when the human species emerged out of the cosmic process.

This new form of energy has a tremendous power of centration, stronger than the negentropic energy of the plants. It has a free-ranging power of moving in space-time and in any number of dimensions that it chooses to invent, thus exceeding without any possible comparison its evolutionary predecessor, the motor energy of animals. Its central characteristic is self-reflexiveness, the ability to roll back upon itself, as it were, and to make sense of the significance it creates and perceives. It projects upon a chaotic environment a man-made order that becomes the structure of a world where lower forms of energy are gradually mastered and managed.

In an earlier treatise on general semantics, I described semantic energy in the following terms:

> The most significant "chunks" of behavior, the basic "molecules" of our lives, are like bundles of perceivings, feelings, strivings, thinkings, and understandings that cohere by some strange force that binds them together in a package. These bundles may extend in time. They may last a few seconds, as when one bursts into laughter at a good joke; they may last for hours and days, as when one worries over a personal problem.
>
> Now let us try and form some idea of the special force that holds these units together and packs the bits of experience that they contain into a tight bundle like atoms packed in a molecule. What makes a behavior unit different from another that appears just as short or just as complex? According to Korzybski, the force that binds together the atoms of these molecular units of behavior is their meaning-value. They form a unit according to what they mean to us at the moment we experience them.
>
> According to this view, our human world is not so much a world of things, constructions, laws, and institutions as it is a world of human activities and of their meanings, a world of semantic transactions.[5]

THE ENERGY that permeates these transactions is what I call *semantic energy.* In the life of the individual and in the life of all human groups, it has a function similar to the binding energy that holds together atoms or molecules. It works like the negentropic energy that gives unity to a biological organism. It keeps cultural groups identical with themselves through time; it expresses itself at the national level as patriotism and loyalty; it surges as a sudden atmosphere of felt intimacy among members of a sensitivity training group or marathon session; it is what makes home and family a haven of comfort in the cold climate of impersonal indifference that fills the air outside.

We have as yet no unit of measurement of that particular form of energy. The general terms used in physics—ergs, foot-pounds, horsepower, and others—do not apply. The electrical scale of volts, amperes, or ohms offer a poor analogy. Fields of forces, like those that surround a magnet and produce induction when they vary, are used by some thinkers who make the most of mechanical mental models. Some speak of potential energy, ready to be let loose, or of kinetic energy, increasing with the positive feedback of self-reflexive achievement and purpose. George Kelly wrestles with the problem in his own manner:

> The physical world presented itself to preclassical man as a world of solid objects. He saw matter as an essentially inert substance, rather than as a complex of related motion. . . .
>
> Today our modern psychology approaches the study of man from the same vantage point. He is viewed as something static in his natural state, hence something upon which motion, life, and action have to be superimposed. He comes alive, according to most of the psychology of today, only through the application of special enlivening forces. We call these forces by such names as "motives," "incentives," "needs," and "drives."
>
> It seems appropriate at this juncture to reexamine our implied assumptions about human nature. If we decide to base our thinking upon new assumptions, we can next turn to an array of new constructs that may be erected for the proper evaluation of the fresh theoretical position.
>
> Life itself could be defined as a form of process or movement. Thus, in designating man as our object of psychological inquiry, we would be taking for granted that movement was an essential property of his being, not something that had to be accounted for separately. We would be talking about a form of movement—man—not something that has to be motivated.[6]

A movement has intensity, speed, amplitude, and interiority. It may vary in any or all of these aspects. This inner quality of the phenomenal movement Kelly designates as *man* is what I refer to when I speak of semantic energy. Until we can invent a suitable unit for its measurement, we can at least attempt to describe qualitatively some of its manifestations.

It shows its explosive force in the temper tantrums of children, in strong emotions that ooze in tears or that redden the face, in anger that bursts into violent speech, and in rage that shakes the whole organism. It comes out in the moaning of pain, in the yell of distress, in the plaudits of an audience carried away by eloquence, in the swelling growl of a crowd growing destructive with indignation. It is the energy of mobs rioting, of nations lunging into war. It multiplies its power with the explosive force of grenades, mortars, long-range artillery, air raids, and atom bombs. It is the energy that men translate into firepower to annihilate the enemy and lay waste his land. On the constructive side, it is the energy that slices mountains with bulldozers, digs open mine pits, and dynamites out of the way rocks that block the opening of canals and highways.

It triggers the energy of technology to rocket satellites into orbit and land men on the moon, to make habitable for scientists the icy wastes of Antarctica, and to make visible for them the depths of the sea. It is the energy of thought, planning, and power that men of previous generations could only dream about. It makes men of today a race of techno-titans. Compared to them, Prometheus and Hercules were puny performers.

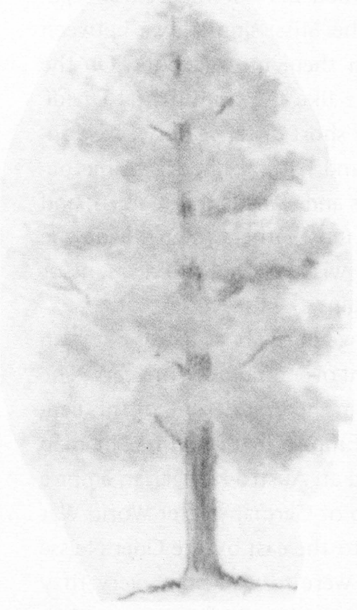
SEMANTIC ENERGY has other aspects as well. It is the energy that binds together an ethnic group and maintains it in existence, such as the Jews, who have survived centuries of persecution, or like the Basques, who have remained a distinct cultural group that withstood the pressures of French and Spanish institutions. It is the energy that holds religions in fervent unity, as in Catholicism, Mahometanism, Buddhism, and the like. It is the energy of new movements that emerge at various epochs of history, such as the energy of the Crusades, the energy of communism triggered off by Karl Marx, the energy of the youth of today that rebels against the Establishment in which they grew fat and free.

It is the energy that animates, supports, and unfolds the whole psychosocial evolution, feeding upon itself and creating new patterns of activity, desires, attitudes, and ambitions in the hearts of men all over the globe. It translates itself into books, articles, classes and seminars, radio and television programs, concerts and artistic exhibitions. It is what links us together at this very moment, you as the reader and me as the writer. We both share a common world of ideas and values that I do my best to express and that you evaluate as you read.

THE EARLIER FORMS of energy—physical-chemical, negentropic, and motor—obeyed the "laws" of their "nature." They yielded to the formative tendency of the cosmic process without initiating any deviation from its predetermined course. The semantic form of energy has a creative power of its own. Men and women have changed the face of the earth. They have endowed themselves with a "second nature," which blends with their cosmically given constitution and transforms it into a self-designed and self-managed source of power. They live in a world they have made, the world of meanings-happenings. It is the world of dreams, plans, and purposes born of the values we accept from our culture or cause to emerge as we mature. As mankind becomes aware of this phenomenon of circular creativity, it enters adulthood. It acquires new knowledge and assumes new responsibilities.

## NOTES

1. See chapter 8, note 6. *Mits* stands for *Man In The Street* and *Wits* for *Woman In The Street.*
2. Arthur Beiser, *The Earth* (New York: Time-Life Books, 1962), p. 160.
3. Mitchell Wilson, *Energy* (New York: Time-Life Books, 1963), p. 69.
4. Pierre Teilhard de Chardin, *The Phenomenon of Man* (New York: Harper & Row, 1959), p. 160.
5. J. Samuel Bois, *The Art of Awareness* (Dubuque, Iowa: Wm. C. Brown, 1966), pp. 38–39.
6. Brendan Maher, ed., *Clinical Psychology and Personality: The Selected Papers of George Kelly* (New York: Wiley, 1969), pp. 79–80.



# 12. Existence

IN A PREVIOUS chapter on reality, I suggested that, in order to bring our picture of the world to date, we ought to let our former categories dissolve into sort of primitive chaos and chop that amorphous mass of ongoings into chunks entirely different from those to which we are accustomed. It is not simply a matter of changing one word for another that we think will describe the thing, person, or situation more accurately. It is a matter of doing away with our previous manner of clustering together a particular group of points-events. It means to invent another mix of words-events and events-words.

To use Korzybski's original analogy of the map and the territory, it would not be enough, in the case of mapping our country, to change the names of the states of the union without altering their present boundaries. We have to erase all such boundaries and see the country as a continuous area to be carved anew into a different set of territorial units, irrespective of previous history, commitment, or allegiance. It is like flying over the countryside as a bird that ignores the man-made division lines. For instance, the very precise spot where the four states of Utah, Colorado, New Mexico, and Arizona meet at right angles would be without any significance. There is no natural boundary visible there, not even a single rock to mark the spot. It is exclusively a man-contrived point from which four imaginary straight lines radiate in four directions: north, east, south, and west. In other cases, where natural features of the terrain have suggested a division, as when the Colorado River separates Arizona and California or when the Mississippi flows between Tennessee and Arkansas, men have taken them into account. On the other hand, a definite geographical feature like the Continental Divide is used as a state boundary for a relatively short distance between Montana and Idaho. A mixture of arbitrary and natural lines is visible between countries, such as the United States and Canada in the north and Mexico in the south. In this case, as in most others, men divide the world into units that they create as they wish, taking into account or disregarding the actual features of the terrain.

It is not easy to imagine a sudden change in the boundaries between nations. Yet, such changes become apparent over a number of years. The globe that we had when I went to school in the first decade of this century had red blotches to show the British Empire all around it. The map of Europe prior to the first World War had an Austro-Hungarian empire but no Poland or Caechoslovakia; the map of Germany after World War II has Germany split in two and limited to the east by the Oder-Neisse line. If a spaceman from another planet were to visit ours every fifty years or so, the political face of the Earth would be different every time he came around.

SOME MAPS constructed for a definite purpose may assume a more permanent appearance, as in the case of a topographical map or a map of natural resources. Some are in a constant state of flux, like the weather map that is shown on the television screen every day.

We carry within our head a map of the significant events that fill the world in which we live. That map may stretch in space and in time in a variety of dimensions. For instance, the world of Michelangelo, which he described on the ceiling and the back wall of the Sistine Chapel, is not at all that of the world of which the present generation has a mental picture. His was a world that had begun at a definite time when it was created out of nothing by an all-powerful personage of majestic appearance. The history of that world was highlighted by a few significant events: the Fall of Man and his exclusion from the Garden of Eden, the Deluge, the Redemption, Death and Resurrection, and eventually the Last Judgment, when Time will stop and Eternity will take over with a humanity located forever in two regions, Heaven and Hell. Today the beginnings of the planet Earth are pushed back billions of years in a cosmic process beyond human measure; mankind is seen as a species among others that existed before. The present condition of men is a stage in a slow evolution from ignorance to a growing mastery of the forces of nature. Their future is a matter of choice between an annihilation of the species by pollution, population explosion, nuclear suicide, or a possible self-transformation into what Gardner Murphy calls a *third human nature*, living in a world made more hospitable by an enlightened creativeness.

In a similar manner, the mental map of what we believe we are has changed considerably in the course of centuries, and the main categories that determine the orientation of our thoughts and values have changed also. We do not see our inner world as made of two domains, the realm of the body and the realm of the soul—one that obeys physical laws and one that conforms to spiritual laws. With the present sciences of man, we take a new view of humankind. Paleontology traces our origin back to our emergence from apelike hominids; archeology and history describe the gradual development of our cultures and technologies; genetics, neurology, psychology, sociology, linguistics, and the like are beginning to reveal to us the complexities of our body-mind makeup, including the cultural environment we have internalized, the past we have lived, and the future we anticipate.

IN THE LIGHT of these inventions-discoveries, we revise the mental map of our inner world. Some of the boundary lines it contains may continue to be useful because they correspond to division that our present stage of development has to take into account; some have to be changed completely because they do not suit our present needs and purposes. Moreover, our map has to assume a new shape: it cannot remain like a flat surface similar to conventional geographical maps. It has to be a multidimensional set of vector lines that keep on changing their length and position as time goes by.

Dividing limits that were important yesterday have become obsolete in many cases; some that are useful today may have to be changed tomorrow. Problems that existed at a time have disappeared and have given place to new ones. This can be illustrated by the example of what technology and invention have done to our transportation systems. For the pioneers who crossed the continent in covered wagons, it was necessary to find places where rivers could be forded and where low-altitude passes would make possible the crossing of the Rocky Mountains. Later, bridges were built across rivers and tunnels were bored through mountains. Once the airplane became a common vehicle for passengers and cargo, men could ignore to some extent the landscape features that had made bridges and tunnels necessary. With the boosters of today's spacecraft, satellites are maintained in a fixed position in the sky above a definite location on the planet, men can orbit the earth above the reach of gravitation and set up research stations on the moon.

Communication also has become more independent from the limitations imposed by natural conditions. The tom-tom and the smoke signal could reach where sound and sight could reach and not beyond; couriers on horseback carried messages to greater distances; telegraph and telephone provided the speed of electricity to sign and voice transmission. Today, radio and television instantly bring into our living rooms the voices and the gestures of people thousands of miles distant.

THE WAY we break down the world of ongoings, either by choice or by necessity, determines the range of our freedom to act and the limitations of what we can do. Each individual has his own world within which he moves and functions; men of different breeds can communicate with fellow members of their breed within limits that are as stringent as smoke signals, tom-tom beats, couriers, telegraph and telephone, radio or television.[1] The structure of the semantic world in which we live becomes the limited environment within which we can think, make choices, and transact with fellow human beings.

At the risk of being childishly simple, I should like to illustrate this notion by means of an apologue. Each animal species and each breed of men live in a world of their own, and the exchanges from one world to another are more limited than many realize.

The apologue goes like this: A seal, a pelican, and a burro once met on the shore of the Pacific in Long Beach, California. As often happens in such fanciful stories, these animals were able to think and to talk. After getting acquainted, all three told their companions about the places each of them had visited. Then one of them, the seal if I remember correctly, made a suggestion.

"What if we met again in San Francisco one of these days? From there we may decide to go further and explore the world together."

His companions agreed. But they soon discovered that, although they could meet in San Francisco, they could not travel together all the way. San Francisco belonged to a world they shared, but the roads to get there were situated in three different worlds. The world of the seal was the world of water; that of the pelican, the world of the air; and the burro had to keep his four feet in contact with terra firma. The seal had to swim, the pelican, to fly; and the burro, to walk. Of course, each of them had a choice within his own world: the seal could skirt the shoreline all along or swim further out at sea; the pelican could fly inland or along the coast; the burro could follow one of the main highways or amble along country roads where traffic is less heavy. But each had to remain within his own world, a world with characteristics that determined what could be done and how it could be done. The speed of travel depends not only on the capacities of the traveler, but also on the conditions of the world in which he moves. He can stop for meals or for rest, depending on the facilities his world provides. The meeting in San Francisco will have to wait until the slowest of the three has had time to join the group.

As our friends were thus discussing their plans, a young boy came along and overheard their conversation.

"Why can't you be in San Francisco this very minute?" he said. "I can!"

"You cannot!" the three exclaimed in chorus. "That's impossible! Nobody can be in two places at the same time. San Francisco is not Long Beach, and Long Beach is not San Francisco."

"That's easy," rejoined the boy. "Come to my house and I'll show you my radio broadcasting set. I can stay here in Long Beach and make my voice heard in San Francisco. And with his own set, my friend in San Francisco can speak to me right here."

The three animals were nonplussed. The boy was talking nonsense; they knew it. Or he must have lived in a world of pure magic, way beyond reality.

Is it magic? Yes, it would have been for even the greatest minds of centuries ago—for such people as Galileo, Bacon, and further back in time, for Pliny or Archimedes. Our notions of time and distance have gone through many revolutions since their days. As I type this, my television set in the adjoining room shows two astronauts on the surface of the moon putting scientific seismographs in position. They are at a distance of 238,000 miles from us, standing on a planetary body that is speeding through space as we ourselves are speeding. This distant and fleeting encounter is made stable in an immediacy that bridges distances. My mental model of the physical world has to allow for such a phenomenon of translation, and I must realize that what is actually going on out there is not the steady picture that I see here on the TV screen.

From this experience I can jump to a learned awareness of my whole mental world, of my inner system of thoughts and values. It may include relations that transcend any construct I may build in my imagination. The empirical world in which I live and my epistemic world are both suffused with relativity. Whatever appears permanent and steady, as common sense would have it, must be understood as pulsating flashes of transaction between processes carried along in orbits of varying significance. As I type this, the analogy of Bohr's shell model of the atom cannot help but appear in my mind. As I see it in my inner space, I remind myself of the reality of pure abstractions. (See chapter 5.)

SOMETHING similar takes place when I draw a visual model of men as semantic transactors in *The Art of Awareness.*[2] I do not mean to present that model as a construct that gives an actual picture of men alive and struggling. Erase each visual detail in turn: the frame of the environment, the four overlapping ellipses, the receding past on the left, and the future on the right side. What is left, in pure abstraction, is the human being with which the new sciences of man are dealing.

We have in our common-sense vocabulary a great many terms that, unknown to us, refer to pure abstractions of that kind. They belong to the same class as the grin that Lewis Carroll detached from the face of the Cheshire cat.

We do not ask ourselves: what is a grin without a face that does the grinning? What is a pure grin? But we often ask questions that are just as senseless. For instance, "What is life?" "What is peace?" "What is courage?" "What is existence?"

When they are put that way, these questions have no direct answer. Life, peace, courage, or existence are not *whats,* they are *hows.* They are not things or substances; they are activities, pure activities, without any necessary reference to a particular actor. Life could be the life of a cockroach or of a genius; peace may be peace of mind or the peace of Versailles; courage could be that of a fighting cock or the "courage to be" about which Paul Tillich wrote a book; and existence could be said of many things, persons, situations, events, thoughts, plans, decisions, and what not. If we are not on our guard, we may soar into metaphysical orbit, far from the empirical world of experience, and we may be captured by the gravitation of the sun that held the central place in the philosophy of the Middle Ages, the sun of pure Being. From Being, we may feel that we have to deal with anti-Being or Nothingness, and we are ready to join the fraternity of existentialists.

INSTEAD OF THAT, let us come back to the epistemological profile and attempt a semantic analysis of our reaction to the term *existence* and to the notion to which it refers. At stage one, existence is taken as the unquestioned property of anything my senses perceive: what I see with my own eyes, what I hear with my own ears, what I touch with my own hands. At this stage, I live in a world of intensive reality, like the child who singles out of the "big buzzing confusion" that surrounds him the things, persons, and places that eventually fill the world in which he will live. Existence at this stage is a form of presence that I can perceive as I perceive my own self when I wake up in the morning. It is an unsophisticated awareness, a first-order experience of being-in-the-world, in a world existing as I do, firm and solid in its "thingness."

The discovery of what is real apparently gives the child a thrill. He enjoys seeing things that pop out as if by magic. It is a game of peek-a-boo. "Now you see me! Now you don't!" "Now you hear the tick of my watch! Now you don't!" It is as if things, people, sounds, and sights come suddenly and disappear suddenly in front of me. It makes my world a world of fantastic magic. It contains many ghostly creatures that are talked about by my parents and people who know. This is the mysterious invisible world of Santa Claus, of the Sandman, or the gremlins and the leprechauns, of the angels and the devil, of God Himself, who is everywhere, sees all and hears everything. Some people remain young and credulous all their life. Their world of mysterious existents is always open to the ghosts created by propagandists and advertisers: they believe in the *Red Peril* and they buy the toothpaste that has *sex appeal.*

THIS LEADS US imperceptibly into stage two, where existence is granted to whatever our culture tells us is "real." We assume that whatever exists has a name, and for every noun, verb, and adjective in the dictionary, there is something that exists, some quality that has appeared somewhere—some action that has happened, can happen, is bound to happen some day or other in the world of "reality." It is the world of words and phrases that float invisibly about us and take, now and then, a concrete form of existence. They embody some kind of Absolute Truth that everybody must recognize. They materialize in practices, rituals, systems, and even institutions that rule the life of every member of the culture. Nobody questions their right to lord it over us. They seem to exist in complete independence of people and conditions. They govern our behavior, thoughts, attitudes, and judgments.

In the Old Testament, we read about the test that the Gileadites used to differentiate the flying Ephraimites who had mixed with their own people and who claimed that they were not strangers.

> The Gileadites took the fords of the Jordan against the Ephraimites. And when any of the fugitives of Ephraim said, "Let me go over," the men of Gilead said to him, "Are you an Ephraimite?" When he said, "No," they said to him, "Then say Shibboleth," and he said "Sibboleth," for he could not pronounce it right; then they seized him and slew him at the fords of the Jordan. And there fell at that time forty-two thousand of the Ephraimites.[3]

We have words and phrases that are the shibboleths of our culture. Some of them sound bad, and we use them to brand people as nonpersons or to condemn deeds we do not like. Some sound good, and we use them to embellish what is ugly or justify actions of which we are ashamed. Our newspapers, magazines, advertising, and "public relations" literature are peppered with examples of that word magic and trickery.[4]

If you admit that you are a *communist*, you do not amount to much in the opinion of most people; when we established *protective hamlets* in Viet Nam, it had nothing in common with *concentration camps*; we do not *brainwash* people here, we *educate* them; for us, Vietcong are *terrorists;* for them, we are *aggressive imperialists.* And so *ad infinitum.* You may continue your own list.

There is nothing really new in this. In the days of the Spanish Inquisition, they burned heretics and unbelievers at the stake, and the performance was euphemistically called an *act of faith (auto-da-fé).*

THERE IS another form of existence that animates a whole network of "realities" created by us. It goes one step beyond stage two, where isolated words and phrases were the ghostly directors of the conceptual traffic in our world of principles and values. We deal here with the actual organization of that world with the preestablished relations that link to one another the various items of our experience. This network is made of the theories and doctrines that fill the inner space of our episteme. It gives a pattern to the structured unconscious of each individual. Its dynamics are our methods of thinking-feeling-behaving; they are the traffic rules for all movements in our inner space.

The outer space is not empty, we know. Nor is our inner space. It is filled with energy vectors that give it a centration around a core of cherished values. Teilhard de Chardin calls these *radial energy.* Some determine interpersonal and intergroup relations, and he calls these *tangential energy.* This multidimensional bundle of energy vectors is for most of us a much more real world than the empirical WIGO (What Is Going On) of which we are an element. We are ready to fight to keep that inner world in existence.

It is the world of *whys* and *becauses,* the world that makes sense to us, the world of our logic, preferences, and principles. It is the semantic world that we project upon the empirical world, fusing both of them into a whole that becomes for each of us the only *real world.* If you threaten to shake loose the structure of my world by inviting or forcing a change in my key notions, my all-pervading values, or my well-established preferences, you encounter a resistance that mobilizes all the resources of my mind, soul, and physical strength. I cannot let my world crumble. Its collapse would mean for me *the end of the world!*

That is what I understand Harry Weinberg meant when he entitled his book *Levels of Knowing and Existence.*[5] My world extends along the dimensions of my knowings, explicit and implicit; and at every step of my "kennetic" inquiry, as Arthur F. Bentley calls my growing in knowledge and power,[6] I enlarge the texture of the semantic spider web that grew out of me and remains my sensitive place of abode. It is made of the relations of causality that I have accepted as satisfactory explanations of the events of history, the workings of nature, and the experiences of my life. Every time I accept a "because," I make firm in my mental world a link I project between two events of the empirical world. Thus, I shore the structure of my epistemic unconscious and nothing short of an earthquake will ever demolish it.

A phenomenon will be a "quality"—like color, for instance—if our language classifies it as such; it will be an action, if its classification is expressed by a verb. The becauses that apply in the case of a quality, expressed by an adjective, or in the case of a thing, expressed by a noun, are not of the same kind of the becauses that apply to an action, expressed by a verb. A quality has a static connotation, as in the statement, "He is a homosexual"; while an action may be taken as transitory, as in "He did this or that." An action is not related to the rest of my world as are a thing or a quality. "I want your love" sounds like "I want the pen you have in your hands." But love is not a thing that you can let me have; it is a process in which we both have to participate.

This applies to many statements, such as "Give me a good reason," "Give me an explanation." If I am not ready to accept your reason or explanation, none can be said to be given. The transaction does not occur, and the explanation or reason did not come into existence. Their existence has to emerge from the joint action of two participants: a giver and a receiver. The absence or the noncooperation of either of them makes their existence impossible.

ONCE I become aware that my *real world* is a construct of the cultural group in which I was born and reared, I enter stage four. Existence ceases to be a characteristic of what surrounds me in space-time. Nor is it a characteristic of myself as an object of my observations. Existence is a condition that I create by my own activity. I am a time-bound member of a semantic group that continues itself in me and in my contemporaries. I am also a time-binder, called upon to enrich our semantic heritage and to transmit it to the next generation. Other cultural groups create their own worlds, and they endow them with an existence different from ours. All together we constitute the multiform noosphere of the planet humanized.

If I do not have the proper instrument to detect certain wave lengths, these wave lengths do not exist for me. If I have no radio, radio messages do not exist for me; if I am blind, colors do not exist for me; if I am deaf, sounds do not exist for me. In the case of shapes—as distinct from colors—my seeing instrument needs a finer tuning. This tuning is not of the retina, but of the visual area of my brain. The experiment of the trapezoidal window shows that what my consciousness reports as objective movement is not what goes on in the apparatus, but what the visual area of my brain has interpreted the movement to be.

So, of what am I aware? What have I to measure and analyze? Is it the outside phenomenon itself, or is it my perception of it? Without my perception, the phenomenon is nonexistent for me. Without men as participants-observers in the cosmos, what would exist? Outside of what men observe, what exists? We don't know, and we cannot know.

EXISTENCE IS A FORM of presence that always involves men as participants-observers. We can conceive of a universe without men, but that concept is nothing but an abstraction from our first-order experience, which is of a man-experienced universe. Our first-order experience has a "physical" aspect—the phenomenon that we say is "out there." It is never revealed without its "subjective" aspect, our perception of it. When we abstract the physical aspect only, we speak of the object; when we abstract the nonphysical aspect only, we speak of our percept. We may even go one step further and locate these percepts in what we call our *mind,* which is, itself, a second-order abstraction from our first-order experience.

By self-reflexive abstraction I can soar above my first-order experience and examine it in its turn as an "objective" phenomenon. This phenomenon I analyze, and I find it made of two components: the thing-in-itself and me. By dissecting my first-order experience in this manner, I destroy it, and I give to each component a new form of existence, which is of my own making. Stage five is a return to first-order experience, in a self-reflexiveness that relates my ego to the experience-as-a-whole and not to the experience-as-analyzed-by-verbal-means. When we make contact with the experience through the verbal means that our language has set for us in advance, we deprive that first-order experience of some of its richness; we take away from it all that it contains beyond words. We have reduced it to what we can say it is.

To verbalize it does not simply mean to take it out of its living context but to find for it a place in the verbal world that we have constructed as we have learned the language that we speak. When we ask "why" and give a "because," we relate this particular phenomenon to whatever other phenomena are already taken to relate to its class in the scheme of thinking that our language offers and according to the type of relation that our language expresses.

FINALLY, we may conceive of a transdiscursive existence, beyond space, time, or whatever categories and construed relations our language or that of any culture has created. We are left with a consciousness of the experience of what we would call *at-oneness.* By analogy, we could describe that at-oneness as the sap that makes the man-nature world grow. Its energy hardens into institutions that provide definite channels for the new sap that is constantly generated. This sap is activated in its turn by stimulating hormones that are produced, like the auxin in the trees, at the tip of its branching advances.

## NOTES

1. The word *breed* is used here in the sense developed in the author's book *Breeds of Men* (New York: Harper & Row, 1970).
2. J. Samuel Bois, *The Art of Awareness* (Dubuque, Iowa: Wm. C. Brown, 1966), pp. 18-25, 27-35, 268.
3. Judges, 12:5, 12:6.
4. You will find many entertaining examples in S. I. Hayakawa, *Language in Thought and Action* (New York: Harcourt, Brace & World, 1964), pp. 89-97.
5. Harry Weinberg, *Levels of Knowing and Existence* (New York: Harper & Row, 1956).
6. Arthur F. Bentley, "Kennetic Inquiry," *Science,* 29 December 1950, pp. 775-783.

# 13. The "Nature" of Man

WHAT do we mean when we speak of the "nature of man"? What is the object or the event to which this term refers? Can we see it, touch it, measure it, or imagine it? Or is it a pure abstraction, a mental construct, like the idea of *number*? Is it one of those ungraspable most important realities, like the atom?

Yes, it is a mental construct, a very ancient one, invented some twenty-five centuries ago by the first philosophers of our Western world. It was a great advance in those days. Our cultural ancestors were just emerging from the world of myth and magic to the world of reason and logic. This invention was taken as a momentous discovery, and it was. In the third stage of my early education, I was introduced to it by reenacting, under the direction of my professor of philosophy, the steps of the early discoverers when they disengaged from outward appearances the pure notion of the nature of man and of all things that make our world.

This third stage had been preceded by two earlier ones, the first devoted mainly to the mastery of French, my mother tongue, which, I was told, was not only the language of diplomacy in those days but also the language of full civilization. The second stage was that of what we now call the humanities. It ended with a baccalaureate in *belles lettres,* or literature. It had lasted four years, during which we had lived in the company of the great minds of the past who had left masterpieces in

Greek, Latin, and French, the three languages we were sure expressed the human mind at its best. Finally, we were to enter the final period of our college life, of two years' duration, during which our education as members of the intellectual elite was to be rounded out and completed. We were introduced to the adult world of the wisdom of the ages condensed in the traditional philosophy that had been kept pure and unsullied from the days of Aristotle. To this was added some lab training in physics and chemistry, with a diligent review of the many new natural sciences that were cropping up all over the field of knowledge at the turn of the century. There was also a strong emphasis on mathematics, which, parallel to philosophy as it was presented to us, was the laborious accumulation of man's experience, tooling, and skills in the scholarly activity of rigorous thinking.

FOR AN INQUISITIVE youngster in his teens, what a promising outlook! At long last, I was where I had wanted to be for years: right in the middle of the world of knowledge, free to enjoy the company of the members of our highest cultural caste, the People Who Really Know! I might, if I worked hard, become one of them, one of the few who would continue, in those first decades of the new century, the glorious tradition of genuine scientific learning.

Philosophy was presented to us as the Science of Sciences. It was the ultimate in knowledge and wisdom. I still remember the definition of it on the first page of my textbook: "Philosophy is the science that gives the final answer to all questions." It was said in the beautiful solemnity of medieval Latin: *"Ultimum quia rerum omnium,"* "The final because of everything." How could a young unsuspecting mind resist such a brainwashing, so congenial to the whole environment, historical, national, and religious, in which he had been born and brought up? Proud of being a member of the Greek-Roman-French intellectual nobility, I was ready to gobble avidly whatever was served to me as the pabulum of great minds.

The first lesson we had in philosophy taught us how to disengage the permanent nature of people and things from the fleeting appearances that common people can observe. Behind the motley picture of a changing world that is for untrained observers a puzzling mystery, we were going to discover the hidden, solid, logical and abiding *reality*. This first lesson was entitled: "On Simple Apprehension."

We were told to think of four individuals we knew well and to picture them as we saw them lately. I immediately thought of my mother in her kitchen, of my grandfather in his rocking chair on the porch, of my teenage sister preening herself to go out with her boy friend, and of my baby brother hammering away at a toy he was breaking apart. The teacher continued: "See what they look like and what they are doing." That was easy. I could picture how different they looked and how different they acted: my grandfather puffing at his pipe; my mother with her quick, smooth handling of the dishes and the food for our breakfast; my sister looking in the mirror and giving a final touch to the curls in her hair; my brother lifting his hammer and banging it down. Those visible appearances and activities, I was reminded, are outward features that have little connection with their inner nature. They are fleeting and changing characteristics that just happen to be what they are at the moment; they can change with circumstances. In philosophy, the teacher said, we call these *accidents*. An accident is "contingent," which means that it can be or not be. Its presence or its absence leaves the person unchanged. The four of them could dress differently, do something else, and they would remain the same persons.

THE NEXT STEP was one stage further in our analysis of the situations we had pictured to ourselves. "Go back to your four personages," we were told, "and observe more closely. They have *properties* that are permanent and yet liable to some change. These properties are not mere accidents. They are actually parts of their functioning selves. They have eyes, arms, hands, fingers, and so on; inside their bodies they have lungs, a heart, a liver, and other organs. These are closer to their nature than the accidental qualities and activities you observed earlier. If a person is deprived of one or any of them—if he is, say, without an eye, an arm, a leg, or if he has only one kidney—he would be a cripple, but still a human being. These properties are not yet what makes a person a human being, although the absence of some of them would impair his capacity to function well. To find human nature, we have to go one step deeper."

Finally, we came to something that we could conceive as the very core of what they have in common, something that does not change with time and circumstances as is the case with accidental qualities and actions, something more essential than a property that makes them function normally. This central something is their *nature.* Human nature is the same for everybody, old or young, man or woman, civilized or uncivilized, learned or ignorant, awake or asleep, working, playing, or doing nothing. This nature is what makes them human, different from animals. We are animals, of course: we are born, we grow, we eat and breathe, we reproduce our kind, we die as animals do; but we are different from mere animals. We have a mind. We are not guided blindly by our instincts and our passions. We have a spirit, a soul, an intelligence; we can think, reason, learn, and worship. These qualities are not mere accidents or properties; they are the essential constituents of our distinctive nature.

From this lesson, it was easy for me to pass to what was meant by the nature of anything, whether created or made by man. I could see that the nature of a tree is different from the nature of a dog, and the nature of a violin different from that of a pick or shovel. Finally, I came to the quite acceptable notion that anything that had a name in the dictionary had a nature that made it what it really was. And the dictionary definition described with authority the nature of whatever exists. There was such a thing as the nature of sound; the nature of the human mind; the nature of our emotions, our desires, our hopes, our fears, and our anxieties—all revealed by their names and definitions.

THUS WAS I led on the primrose path of verbal knowledge. Thus was I brainwashed to the point of believing that the world around me and inside me is made of permanent natures that I perceive when I focus my attention on them. They are; they exist. I live in the midst of them, as I live and move in my house, in the city of Los Angeles, in the state of California.

A time came when I decided to shake myself loose of that delusion. Words spoken or written are not exact pictures of that to which they refer. Things and events do not relate to one another as words relate to one another in a grammatical manner. Letting my language guide my thoughts and actions means turning away from reality and living in a world of words. The disparity between what is actually going on and what we say about it is so great that no wonder we often find ourselves in deep trouble. We are trying to deal with a world in constant flux by using static concepts. The notion that the nature of man is the same in all of us is one of the most dangerous concepts of that type.

Our perceptions themselves are affected by these static concepts. We perceive events according to the way our language describes them. When our language talks about them as if they were unchanging natures, we see them and we react to them as unchanging natures, identical to themselves in all places and under all circumstances. We go by definitions, and we react to definitions, thinking we react to actual persons or situations. You know the corny answer of that man who was asked: "Who is that lady standing there?" He said: "This is no lady; this is my wife!" Don't psychoanalyze him à la Freud; he may be just obeying the dictates of his dictionary: the definitions of *lady* and *wife* are different. He had not learned to see his wife in the role described by the word *lady*.

WHO WERE THOSE who decided how our language should describe things and people? They were our remote ancestors, way back at the time when they had, according to Cassius Keyser,

> no science, no philosophy, no art, no religion; they did not know what they were nor where they were; they knew nothing of the past, for they had no history, not even tradition; they could not foretell the future, for they had no knowledge of natural law, . . . they were without tools, without precedents, without guiding maxims, without speech, without any light of human experience; their ignorance, as we understand the term, was absolute.[1]

Are we bound by the agreements these people entered into among themselves to deal with what they knew so little about? Are we going to repeat the error of the Greek philosophers and sanction the adequacy of a language based on such ignorance? Or are we going to revise our language—and our thinking—in the light of what we now know about the world and about ourselves?

If our fellow humans who work in the physical sciences had refrained from revising their notion of the nature of the atom, we would have no computers and no communication satellites. They kept the word *atom*, which meant originally "a bit of matter so minute as to admit of no division," but they dealt with it as a packet of energy that could be torn open with a terrible bang. In the sciences of man, some of us are still hesitating when it comes to questioning the value of some such hoary notion as human nature. Few of us are ready to follow the cultural iconoclast Korzybski, who wrote one generation ago:

> There is nothing sacred about any verbal formulation, and even those that seem most fundamental should be held subject to structural revision if need should arise.[2]

WHAT WAS MY PROFESSOR of philosophy doing to me when he guided me through the "scholarly" process of finding a human nature as the common element in my grandfather, my mother, my sister, and my baby brother? He was, unwittingly of course, saying to me, with all the authority of his exalted position in my educational world: "Keep seeing the world that you will live in in this twentieth century as your primitive ancestors saw it in their unguided ignorance. Keep as sacred the confirmation bestowed upon that ignorance by the first philosophers, who had none of the sciences of today to help them in their speculations."

Later, much later, long after I had passed with success my exams in philosophy, I read in *The Story of Civilization*, by Will Durant:

> Aristotle was compelled to fix time without a watch, to compare degrees of heat without a thermometer, to observe the heavens without a telescope, and the weather without a barometer. . . . Of all our mathematical, optical, and physical instruments, he possessed only the rule and the compass, together with the most imperfect substitutes for some of the others. Chemical analysis, correct measurements and weights, and a thorough application of mathematics to physics were unknown. The attractive force of matter, the law of gravitation, electrical phenomena, the conditions of chemical combination, pressure of air and its effects, the nature of light, heat, combustion, etc.—in short, all the facts on which the physical theories of modern science are based were wholly, or almost wholly, undiscovered.[3]

This passage of Durant's popular book, typical of many similar ones with which you are surely familiar, began to break off pieces from the base of the monument erected to the glory of Aristotle in the center of my philosophical world. I kept admiring him for the theories he cleverly derived from the limited information available in his time, but I realized that it is not fair to his memory to expect him to guide my thinking in sciences he could not even anticipate. We can only guess what a man of his caliber could do with the findings of anatomy, physiology, neurology, linguistics, psychology, sociology, anthropology, and a host of other disciplines that are current today.

A CONTEMPORARY metalinguist, Benjamin Whorf, deals directly with the agreement entered by our primitive ancestors and confirmed until recently by experts in the sciences of man.

> We cut nature, organize it into concepts, and ascribe significance as we do largely because we are parties to an agreement to organize it that way. . . . This agreement is, of course, an implicit and unstated one, but its terms are absolutely obligatory; we cannot talk at all except by subscribing to the organization and classification of data which this agreement decrees.[4]

Thinking is talking to ourselves. So, our conscious thinking—and even our subconscious thinking for that matter—has to conform to that unstated agreement. Here is the way Clyde Kluckhohn, the anthropologist, wrote it years ago:

> Every language is a special way of looking at the world and interpreting experience. . . . One sees and hears what the grammatical system of one's language has made one sensitive to, has trained one to look for in experience.[5]

So, instead of conforming my thinking to the now obsolete agreement that made me a slave to a language of ignorance, I decided to train myself according to the most recent views our brothers of the sciences of man have devised. I soon discovered that these new views went plump against the plain common sense that everybody takes for granted. I had to start from the beginning and discard the first lesson I had learned in my first year of philosophy. Instead of mentally dissecting my grandfather, my mother, my sister, and my baby brother by removing first their "accidental" qualities and actions, and by rubbing off their personal "properties" from the picture I had of them, I took an altogether different approach—I stopped trying to reach for that abstract core of their being we call human nature. I went by the title of a book by Pierre Teilhard de Chardin, and I took a fresh view of them. I saw them as *phenomena,* just as I would look at any new thing I have never seen before and on which I have no pre-set opinion. I found that a philosophical school had been built around that notion of fresh observation, free from preconceived classifications. It is called *phenomenology.* Here is how my dictionary of psychological terms describes this discipline:

> A theoretical point of view that advocates the study of phenomena or direct experience taken naively or at face value; the view that behavior is determined by the phenomena of experience rather than by external, objective, physically described reality.[6]

I SOON FOUND that phenomenology itself was rather an attitude than a rigorous science. A psychologist friend of mine calls it "a disciplined naïveté," and I agree with him, except that this naïveté itself is a slave of language, the continuing master. To free oneself from this bondage, one has to practice regularly and for a long time a most difficult skill, the skill of experiencing without talking to oneself, of functioning at what Korzybski called the *silent level.* Thanks to such a practice, I eventually mustered up the courage to venture into a world where I could not see any signpost planted by my language and no road that follows the axioms of common sense.

One of the first words I worked with was the word *phenomenon* itself. I did it by putting myself through a simple routine that you might find childish. You may try it yourself, if you like. More than once, students who saw me going through the routine said that it gave them a new orientation. Here is how I did it.

I lit a candle, held it in my hand, and looked at the flame. That flame was the phenomenon on which I meant to focus my attention. I could see it and feel it. I reminded myself that some call this flame an *open system,* meaning that it draws its existence from its environment and pours back into the environment the results of its activities. When I lit the wick with a match, I created a vacuity into which the energy locked in the paraffin engulfed itself, producing the light and heat I could see and feel. That flame was the phenomenon. It existed because of the molecular action and transformation that went on, and I could sense the precariousness of its existence. My four subjects of observation—my grandfather, my mother, my sister, and my baby brother—are such phenomena. They are open systems also. I am told that all the molecules of their body renew themselves without interruption, just as the molecules in the flame come in and go out of a system open at both ends. The human system lasts longer than the flame, of course, but not so long as we thought years ago; perhaps no more than a couple of weeks. What makes people identical with themselves for months and years is nothing material, in the sense of a lump of matter, like a stone for instance. This takes eons to assemble itself and to disintegrate; human beings last some seventy years on the average. But they are ongoing phenomena just the same, kept in existence by their own activities.

These human phenomena are in constant interaction or, better said, transaction with their environment of things, people, institutions, practices, and rules of conduct. These transactions are not ruled by physical laws—like gravitation that makes water run down hill—nor biological laws—like the instinct that guides birds when they build their nests. They are ruled by a specifically human guidance system, the guidance of men's evaluation of whatever they encounter: things, people, and situations. The world in which they live keeps on being built along the vectorial dimensions of their feeling-evaluating activities, spontaneous or planfully guided. Although my grandfather, my mother, my sister, and my baby brother lived in the same house, their individual worlds, which the psychologist Kurt Lewin called their *life-spaces,* were as wide apart as we can imagine. We could even give a complete flip to the common-sense statement about their "human nature" and say that it is their nature to be *different persons living in different worlds.* Each of these worlds is unique: it never was and never will be anyone else's.

THIS CHANGE in the meaning of the word *nature* involves a change in the meaning of a whole family of words to which it belongs. This group includes such terms as *natural, normal, average,* and on the fringe or in opposition to it, the words *supernatural, preternatural, artificial, unusual, exceptional, miraculous, abnormal,* until we reach the very confines of a network of verbal forms that spread over our epistemic world, dividing it into two contrasting sections: the insiders and the outsiders, the true and the false, the good and the bad, the chosen people and the lost tribes, the saints and the sinners, the "free" nations and the communist countries, etc. It is the old dichotomous split of stage-two epistemology reappearing under a modern guise.

In the ages of faith, the outside field had a third dimension of height and depth, with an above and a below added to the right and left. Above the common visible world, there was the supernatural, which was the realm of God, the angels, the miracles, and theology; below was the realm of the devil and of his works. People who could claim successfully that they had received a revelation from on high described without hesitation what was going on in the world of the beyond. On the sides, to the right and to the left, in front and behind, there was the misty world of the occult, benevolent in parts and malevolent in parts; the world of the demented, of the magicians and casters of spells, of the gremlins and leprechauns; or, on the bright side, the world of the poets and geniuses, the saints and the miracle workers, the guardian angels, the ritual blessings and sacred objects. A great part of that nebulous atmosphere of wonder is still taken as real by people of our day and age. They are reacting to WIGO (What Is Going On) as children who see their world of limited experience wrapped up in a magic cloud from which emerge charismatic leaders like Lenin or de Gaulle, seers and healers like Edgar Cayce, messengers of wisdom like Khrisnamurti or Maharishi Mahesh Yogi, superhuman guides of their people like Gandhi or Mao Tse Tung, or devils incarnate like Hitler or Stalin. It is also the surrounding mist where phenomena appear that cannot be easily explained: children who remember a previous incarnation, fakirs who lie down on a bed of nails, yogis who control their heart beats and their breathing, barefoot walkers on burning coals.

IF WE DO AWAY with that artificial shell that grew around our world of nature in the early stage of our embryonic development as a species, we may picture the whole universe as a fullness of activities, processes, vibrations, waves of energy, or what have you, some of which we are beginning to grasp and some of which we can only postulate. In the course of our existence on the planet Earth, we have learned to relate ourselves to some of these, and this realm of known relations we call *nature.* As we expand this realm in size and in time, we assume a greater responsibility for what shall become of us as a species and for what will become of our expanding environment as our place of abode. What we used to call the *nature of man* could be seen not as a hard atom that is the same in all human individuals but as a unique bundle of activities of thinking, feeling, and evaluating; a dynamic cluster of skills; a vortex of chemical-physical-electrical exchanges with the environment; a dynamic whole, aware of itself and of its transactions over the past and the future, within a universe of self-propelled expanding energies. Human nature, as seen by the Greek philosophers, was a first unit of discourse obtained by centering human experience on an assumed hard core that did not vary. We now recognize that our units of discourse are arbitrary choices that depend on the amplitude of our knowledge and on the spread of what we feel should be taken into account at a certain moment of history in the making. The individuals are like subsystems in larger systems—such as the family, the profession, the cultural group, the nation, and humankind as the noosphere all over the planet—until we reach the supreme totality, as we conceive it, of whatever has been in existence and continues to exist.

The old distinctions between natural and nonnatural, visible and invisible, material and spiritual, proved to be boundaries set up by men in conformity with whatever they knew at the time. These categories were useful as long as we had no other way of putting order in our experience. They are now fading into a blur that different cultures segmentalize differently. We are back to the statement of Benjamin Whorf quoted above: "We cut up nature, organize it into concepts . . . because we are parties to an agreement to organize it in this way."

THE CUT between man and other existents was not sharp in the days prior to the Greek philosophers. Heroes were born of the gods, and in many cases, men who disobeyed the gods were turned into beasts. Later on, men with supreme power over their fellow men were endowed with divine attributes. Even today, some people react at stage one, that of magic and superstition, when custom, law, or popular favor anoint with charisma leaders that emerge from among us.

In a universe that they see as chaotic and unpredictable, men find security by creating sharp distinctions among segments of their world, and for them—as for all stage-two reactors—the terms *nature, natural,* and *normal* mark clear-cut boundaries in their map of the universe. They behave according to nature or against nature, they conform to what is average for their age and condition, they strive to remain within the safe range of normalcy.

At stage three, there is a bit more leeway. Variations are accepted within a range provided by scientific measurements and statistics. But the assumed objective validity of categories and measures remains. Things are still what our language—improved by mathematics—says they are. All we have to do is to find more precise words and more accurate measurements to make of our mental map a scientific picture of reality.

At stage four, we accept the cutting up of nature that is current in our cultural milieu. But we are aware that the cutting could be done differently and according to dimensions that have no correlation with those we use. What is taken as natural here and now may not be natural at all elsewhere and at other times.

We live easily at stage four when it comes to art. Each new painting, each new sculpture, each new building, each new musical composition is an original creation. It is not an average of past performances. Some may receive the sanction of popular acceptance for years or for generations. They become classics, like the *Iliad* or the *Divine Comedy,* the *Mona Lisa* of Leonardo or the *Pieta* of Michelangelo, the cathedral of Chartres or Notre Dame de Paris, Haydn's *Creation* or Beethoven's *Fifth Symphony.* Once they have come into existence, they become permament elements of the world in which we live. Some are less known, but they form the milling crowd of our advances along the road of history, from the raw isolation of cave life to the sophisticated—and danger laden—agglomerations of today.

Yes, I know; all was not perfect on the way. Many times we made the wrong decisions, and there are dead bodies and ruins strewn on the tortuous path we followed through the centuries. But, as a very young species, like a child crawling in the dirt and still unable to walk erect, we have not done so badly. The time has come to give up the notions that have guided our behavior so far and to replace them with some that are more in keeping with our technological advances and our recent art forms. After our childhood and its lack of planning, it is time to enter adulthood and manage our life in full humanness.

"When I was a child, I spoke as a child," wrote Paul the Apostle, "I thought like a child, I reasoned like a child; when I became a man, I gave up childish ways."[7]

To use the term *human nature* without the proper corrections is a childish way of talking about ourselves.

Instead of asking ourselves, "What is man?" we had better ask ourselves: "Where do men come from? How have they developed to be what they are today—economically, technologically, politically, religiously, etc."

MEN EMERGED from the animal kingdom one million years ago or thereabouts. For a long time they were hardly distinguishable from many tool-using animals, until they acquired, some forty thousand years ago, a brain-dominated capacity to behave planfully. This capacity to plan and to accumulate experience from one generation to the next became the powerful agent of their cultural evolution. It introduced tools and machines, institutions, arts, education, religions, governments, population increases, etc. Instead of becoming merely more differentiated within a common species, as was the case for certain animals (elephants, monkeys, cattle, dogs, etc.), they bridged their differences by establishing relations among their various groups to the point that they now form a moving mosaic of interacting subcultures, all different but all human. The problems of this new humankind, now thousands of times larger than it was at the beginning and immeasurably more powerful than previous generations could ever have dreamed, are not problems of dealing with the threats of their physical and animal environment, but the dangers created by the man-made environments by which they have transformed the planet they inhabit (pollution, rivalries among sovereign nations, economic inequities, the population explosion, traffic congestion, and so forth).

Such is human nature or, better said, the human condition of today. It is the emergent of everything that has happened until now. This human condition has to change, and it can be changed because it is man-made for the most part. Now that we are aware of how it came about, we can do something about it.

## NOTES

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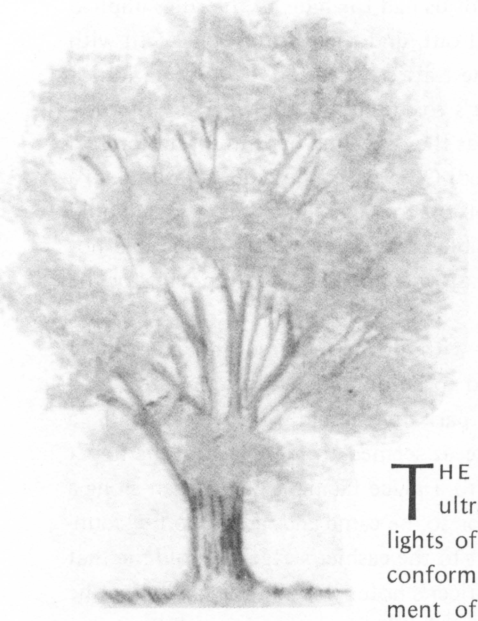


# 14. Episteme as a System

THE OTHER DAY I went to a huge ultramodern garage to have the front lights of my car checked so that I could conform to the rules of the state Department of Motor Vehicles. The California Highway Patrol officers had inspected them a few days before and had directed me to have them straightened out if I did not want to be in trouble with the law.

As I drove in, a young girl with a dark blue denim frock came to me and asked: "May I help you?" The instant I told her what I wanted, showing the card I had been given by the traffic officers, she quickly turned around and went to a desk, returning shortly holding a long form in her hands. The form was in three copies with carbon sheets between.

Instead of meeting a human being to whom I could relate as a person, telling my story, my anticipations, and my doubts, I soon realized that I was meeting a *system.* The system was impersonal, efficient, and mechanical—smooth running with precision once turned on, but without any feeling and deaf to whatever I would like to mention that was not foreseen as relevant to the routine programmed in advance by whoever invented the system. The girl who greeted me with the conventional grin that passes for a smile and asked the standard question, "May I help you;" was not a real person to me, and she did not treat me as a person either. Both of us were grabbed by the system that ran the garage, and we had to let ourselves be processed by it once I had entered and she had made contact with me. Both of us had to abide by the rules implied in the forms that had to be filled out, and these forms had to fit with the form I had been given by the traffic officer. My interpretation of the checks entered on the officer's form did not jibe with her interpretation, but she was "in charge," as they say, and her interpretation had to prevail as the system demanded. Otherwise, she would have taken a chance with the results of the job on the lights, and the garage would have been responsible for a possible error owing to a risk she had not the authority to take. And my case was not important enough for the garage foreman to be called in.

Once the form was filled in with all the required details, most of them irrelevant to what I wanted to be done, I was given a huge card with a number on it and told to park my car and wait. After a while, a mechanic appeared from nowhere, it seemed to me. He told me to get out of the car, which he moved to a place facing a workbench along a distant wall. After half an hour or so, he came and led me to the counter of the Parts Department, next to the cashier's cage. He told me that the girl's interpretation of the officer's notes was all wrong, but that he had checked just as she had directed—"In case, you know." Someone in the Parts Department signed in the space indicated in the officer's form, stamped the time with the electric clock, and passed all the papers to the cashier. The cashier held the invoice in front of me, pointing to the amount at the bottom, took my money, and gave me my change after stamping the invoice "paid" and initialing underneath.

I was charged and paid for a full hour, because that was what the form said, and the cashier had to go by that form unless I wanted to bring my objections to the manager, who was awfully busy at the time, I was told. "You may park your car and wait. He is in the other department with a client." The correction, even if I could have it made, would not have saved me what my own time and my peace of mind are worth. So I drove out.

THIS IS a trivial incident that illustrates a common situation in our mechanized, efficient, and impersonal culture. We do not deal with people, as we did in my village fifty years ago, or even as I did in the small town where we lived twenty years ago. We deal with systems, impersonal, cold, and efficient in maintaining themselves in a snobbish independence from us, plain Joes, consumers, and taxpayers. The garage itself is a subsystem of a larger system, that of a smooth-running automobile sales and service organization. This, in turn, is subservient to the general sales and service system of the auto manufacturer of which this garage is an agent. And this is locked in the larger system of industrial competition from other manufacturers and from the imports that are flooding the market. On the side, they have to respect the state system of traffic rules and record keeping.

Our daily contacts have been dehumanized, standardized, and robotized. Life has become too complex to be lived on the basis of uniqueness to uniqueness. We are numbered items in a pile of units lumped together according to statistics, and our individual fate is determined by the norms of the statistical distribution. We say that we live in a "free" country, and that is true in a very limited sense, since we cannot point to any dictator. We don't need any personal dictator. The system is the dictator. Its power rules our steps, our decisions, our money, even our thoughts.

Some people have internalized the system; they gesticulate and move as it guides them from inside. They function at stage two, and they genuinely feel that what they observe is "reality," and what they do it of their own decision. Others function at stage three, where the "laws" of the game of thinking are determined by the rules of common sense. They look for efficiency in the smooth running of what is generally accepted and fashionable; they have no patience with anyone who does not fit willingly within the system. They are at one with the system, like well-oiled robots in a huge plant, programmed and run by the computer brains of educators, politicians, engineers, economists, advertisers, and public relations men.

Some systems are much more powerful than the one that rules the auto service and repair business. They run countries internally and externally; they determine the behavior of political rulers and plain citizens. These systems are the epistemes prevalent in different regions of the planet at different epochs of history. They are well hidden within the brain cells of people who take the dictates of systems as the laws of human nature. We are just beginning to perceive their elusive presence and to form some idea of their subtle power on human thoughts and values. There are strong indications that they divide the human race into breeds actually living and operating in worlds of subjective reality more different from one another than we ever suspected. They account for phenomena that have been classified until now as mysterious, determined by Fate, and totally beyond the control of men.

ONCE WE HAVE developed the proper mental instrumentation to detect these epistemic systems, we see them in action in a variety of events and situations. As these pages were written, there was one that made front page news in the daily papers.

It was in June 1971. The *New York Times* had published in installments a digest of secret documents dealing with the decisions taken in high governmental places concerning the Viet Nam War before and after the 1964 election, when President Lyndon Johnson, who had presented himself to the nation as a dove, defeated presidential nominee Barry Goldwater, who had been branded a hawk.

The documents revealed that, contrary to what the common man had been led to believe, the Johnson administration had actually prepared itself for an intensification of the war and the bombing of North Viet Nam while it was still protesting to the nation and to the whole world that no such thing was even contemplated. In November of that year, Mr. Johnson, who had already completed the term of the late President Kennedy, was elected on his own as a president who was going to keep our country at peace. Early in the following year he ordered the intensive bombing of North Viet Nam, as had been already planned in a "general consensus" arrived at in the previous September, early in the campaign that preceded his election. Drafts of what was to become the ill-famed Tonkin Resolution had been submitted to him earlier. To sum it all up: The documents published by the *New York Times* established beyond doubt that the public had been deceived by the highest authority in the land.

"Why was this done?" asked commentators on political affairs. Should we simply condemn these men—the president, the members of the cabinet, and the special advisers—as if they were personally and perversely committed to war and to lies?

Indeed not. They all were honorable men. They were, at the time, troubled and anguished men. They unquestionably believed that they were serving the loftiest interests and the historical mission of the land of the free and the home of the brave. Their decisions seemed to them the unavoidable necessities of their patriotic duty.

When the following Republican administration, headed by Richard Nixon, rushed to suppress the publication of the papers that laid bare the evident shortcomings of the former Democratic incumbents, we saw that something transpartisan was involved. Both parties are in agreement on one vital point: "Secret" papers that conceal facts of vital concern to the citizen-voter can remain secret as long as the men in power decide that they should be. It is not a question of morality, of truth versus untruth. The men in power have the right and the duty to tell lies. Their code of behavior is beyond simple morality as the common sitizen understands it. How could this be?

THE ANSWER that I propose is that something beyond truth and untruth, something beyond common values and naive morality is directing the performance of the principal actors in this momentous scenario. That something is the *epistemic system* to which we feel we owe blind obedience. Let us not blame the persons involved; let us not accuse them of being corrupted by a personal drive for power. As a competent observer, who believed in that drive-for-power theory, put it: "The corruption of individuals is incidental to the corruption of the political process and political system."[1]

I agree with that observer when he suggests that we look past the individuals to the system in which they function. But I disagree with him when he stops at the political process and system. We have to go beyond that, deeper than that, until we reach the epistemic system itself. It pervades all our institutions, and it is not corrupt. It is simply obsolete, antiquated, and inadequate to the conditions in which we live. I described it elsewhere as the semantic world in which men of Breed Two live and function.[2] For them, the world as they see it is *reality*—plain, objective, unquestionable reality.

It is a world of contrasting absolutes, where people are either good or bad, deserving to be trusted or deserving to be destroyed. There is no middle group, no more than there is a middle group in Michelangelo's *The Last Judgment* on the wall of the Sistine Chapel. There, the eternal order of truth and values is exemplified by God's final judgment, separating forever the elect and the damned. It is a world of win or lose, with no compromise accepted, because to compromise is tantamount to accepting that the opposite side is partially right and ours partially wrong. It is the world of that schizophrenic murderer I once examined in jail, where he was detained without bail after having admitted that he killed many persons he "knew" by revelation were bad and deserving to be destroyed. It is the world of a transmorality that does not stop at what naive people call injustice and untruth, but soars to heights where cruelty is a virtue and destruction of unworthy human life is a duty. It is the world of the wars of religion of former centuries, now seen as ideological crusades to save the world from either one of the two reciprocal heresies that clash violently in mutual deterrence. It is the world of self-defense and nonaggression on our part, the world of sneaky infiltration on the part of the enemy. This attitude is institutionalized in our Department of Defense, created, not to wage war as our slanderous opponents claim, but to contain the ugly wave of communism that threatens to submerge the "free" world. It is a world where neutrality is total disorder, as one of our worthies declared: "It [neutrality] must be knocked down wherever it raises its ugly head. . . . I think nothing more important than to stop neutralist talk wherever we can and by whatever means we can.[3]

This epistemic system, in spite of its inhuman characteristics, is man made, all of it. Not that human "nature" is intrinsically bad, mind you. But the system has been invented and is accepted by men who have not yet reached the full development of their cultural adulthood. We behave like young kids ignorant of the dangers of the tools we have fabricated, and we are looking for whom to blame when explosions occur that kill or maim some of our buddies.

Like all systems, including the rather innocuous one I met with in the garage, our epistemic system is impersonal and has no respect for persons as such. It defends itself with a sharp counterattack, like a nest of wasps when they are disturbed ever so slightly.

WHAT I now have to say is most difficult to express and most difficult for the reader to accept. I know it from experience. It took me years to recognize that the world of dogmas and religious values in which I had been raised is an impersonal, ruthless system that would not yield to any interference within itself or from outside. I was sincere. Oh God, I was! And those who arraigned me before the Holy Office, now euphemistically called "The Sacred Congregation for the Doctrine of the Faith," were equally sincere, possibly more so, in a way, since none of them grew out of it. As to the Fathers Commissars, as they called them (all Dominicans by the way), and the "Defensors of the Accused" (who, in my case at least, were all Jesuits), I am ready to give them the benefit of the doubt. In fact, I thought I was magnanimous on that Easter Sunday in Rome, when, through a peak experience that was epoch-making in my personal life, I suddenly and unexpectedly felt genuine love for all those who had contributed to my misery; but now I do not see my reaction as one of magnanimity. I would rather describe it as a semantic jump, a momentous one I'll admit, that took me out of the world where I used to identify persons with the system in which they live, labor, and suffer. The persons are my brothers and sisters in the human family; the systems are Frankenstein's monsters let loose. I even see people who swing with the system as unwitting victims of it, locked within a prison they have learned to call home.

The next system-world to which many commute from the previous system-two jail colony is also a world taken as objective "reality" by those who were brought up in it or have adopted it. It is the habitat of Breed-Three men. It is a world of trained resourcefulness, of sound expediency, of searching surveys and statistical measurements of trends. It is the world of reason that is bent on being "practical," abetted by inductive thinking. In this world, the findings of the Gallup polls are taken very seriously, the letters to the editors are a worthwhile activity, the telegrams and the letters to Washington and to the capital of the state are distinct contributions to the political enterprise. It is the world of the "silent majority," of the "mainstream of public opinion," of banding together with other progressive men in some common cause.

It is the world of long-range strategy and opportunistic tactics, based, of course, on the best intelligence reports available. It is the world of computerized information, of measurable predictability, of system analysis planning, and such.

There is something of value in all that, but in my estimation, it fails to hug the moving reality of human ongoings. It works tolerably well in relatively simple situations, particularly when these include mostly people whose behavior has been standardized at that level. Results are obtained within the system, and the hope eternal in the human breast keeps expecting from the system what it cannot deliver. Beyond this system, there is need of a transformation, of an evolutionary mutation of our present episteme. What I see as our most important job as humans in this last third of the twentieth century is to train ourselves as best we can in the practice of a "system of no systems," something similar to what has been called many times a "method of no methods." By doing so, we may eventually yield intelligently to what Lancelot Law Whyte calls the *formative tendency* of the whole cosmic process to which we belong.

It might help if we picked out of our experiences mental models that lend themselves to a dynamic evolutionary view of our functioning, of our participating in a world-in-becoming.

WHAT IF I pictured to myself the world of humans as a symphonic transaction, in which each of us is a sound-making element. I would then see my personal role as that of a player who enters the transaction with a readiness and a willingness to swing with it and make it a work of creative harmony. I manage myself as a musical instrument that has the capacity to tune itself to the whole orchestra and enter the ongoing play at the suitable time, bringing to the total harmony the contribution of my own unique sound and timbre.

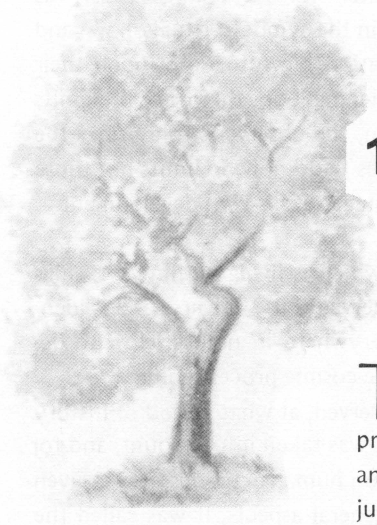
There was a time, many generations ago, when all singers and instrumentalists had to play in perfect unison. The richer beauty of polyphony was not yet invented. Now, counterpoint and chords blend in composite beauty a variety of sounds that bring the whole performance to a higher level of artistic achievement.

In a jazz combo, no definite partition is determined in advance in all minute details; the blending of individual performances is left to the sensitiveness of participants, who guide themselves by soaking their whole being in an all-embracing harmony-in-becoming that keeps creating itself as it goes on and on. Eventually the players and the sound environment merge into a rhythm that carries them along in an entrancing experience.

This mental model gives substance to my dream of participation in harmony created and felt by a group of performers who join in the supreme art of living in conscious togetherness.

## NOTES

1. William Pfaff, "The Viet Nam Papers: A Question of Power," *Los Angeles Times*, 20 June 1971, Section J.
2. J. Samuel Bois, *Breeds of Men* (New York: Harper & Row, 1970), pp. 64-80.
3. *Los Angeles Times*, 20 June 1971, Section J.
4. J. Samuel Bois, *Breeds of Men* (New York: Harper & Row, 1970), pp. 112-126.



# 15. A Meditation on WIGO*

THERE are various ways of describing the ongoing character of the cosmic process, of which we are both participants and observers. We are, first, participants, just as any other happenings—small or large, long or short, slow moving or flashing by—participates in the flow of space-time ongoings. From the electron to the atom, from the atom to the molecule, from the molecule to the cell, from the cell to the organism, participation is a common characteristic of whatever exists in the fullness of the cosmos.

We are observers as well. The first observer was the plant, with its low degree of awareness. It reacts to direct stimulation by mobilizing the energies of its formative tendencies beyond the intensity of the impact of the stimulus. It takes into account what impinges upon its functioning and stirs it to further growth. It is not passively related to the rest of the cosmos; it relates itself by a display of energetic resources that reside within its organism.

Animals are keener observers. They take into account what lies at a distance in space and in time: they see and hear what happens far from where they stand, they remember, and they foresee, they relate to events that require interpretation of sensory intake, they react to threats and

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to petting, they perform wooing dances, they build nests, they protect and train their young.

Man's power of observation is greater still. He is conscious of his awareness, expresses this consciousness in the symbols, rituals, laws, and institutions that he creates. These creations, in turn, react upon their maker in an ascending spiral of ever-widening loops that trace the limits of the world in which he lives. In man, the observer's role brings the participant's role to levels of possibilities that know no limits but those that he himself accepts as the ultimate stages of his own development.

WE RECOGNIZE that the zest, which is living within us, springs from a fundamental urge that pervades the universe and is identical with the creative force active everywhere in nature. How to describe that form of energy that keeps the cosmic process going?

Depending on what level it was observed, at what period of history it was studied, in what cultural milieu it was taken into account, and for what purpose it was brought to bear upon human activities, it was given different names. Seen under its most general aspects, it was called the "formative tendency" by Lancelot Law Whyte, the "within" of things by Pierre Teilhard de Chardin, the "evolutionary urge" in popular literature. At the level of living forms, including man, Henri Bergson called it "life's momentum" *(élan vital),* and Hermann Keyserling recognized it in the *gana* that is accepted as the hidden determinant of choice and behavior by the people of South America. At the level of psychological functioning, Freud saw it as the *libido,* or pleasure principle, Adler described it as the "drive for power," Jung called it "individuation in the making," and Sylvan Tomkins speaks of it as the dynamic "central assembly" of all drives, affects, values, and conditioning, the integrating power of which Penfield locates in the centrencephalon.

Unspecified and omnipotent, the urge operates in the cosmos as a whole. Specific and limited, it manifests itself in a definite locus, in a cluster of point-events, in an individual organism, or in a group of organisms in a mutual exchange of vital energies. Man can attune himself to the power of this all-embracing energy by whatever is accepted for this end in his cultural environment: by contemplation at the silent level as suggested by Polanyi and Korzybski, by entering into a mystical trance like the dervishes, by invoking the muses in mythological practice, by praying to the Holy Ghost in the Christian dispensation, or by allowing oneself to commune with the totality of what is going on in a peak experience. It then becomes conscious participation in life's momentum, in the formative tendency, in the evolutionary urge that brings about new emergences. In man, it is "being-cognition" (Maslow), where observer and the participant roles fuse into a transcending experience. If the flower could be aware of its transformation into a fruit, and if the fruit could be conscious of its growing and ripening, they would have that kind of experience. Man, the self-reflexive form of life, can attune himself to it, contribute to its development, and give it added momentum and direction. This is the source of all creative productions, including scientific advances, artistic masterpieces, and constructive initiatives in human development.

WE MAY PICTURE this urge of creativeness—this dynamic "within" of everything that exists—as a pure activity, sufficient unto itself, self-sustaining and self-propelling. We may see science, works of art, institutions, skills, accumulated experience, etc., as visible, tangible, measurable by-products of this activity. The activity of being alive, of enjoying life and enhancing it would then be its own justification, as when we say, "It's good to be alive!" The tree does not simply produce fruit; it must "enjoy" being alive and functioning as a system of biochemical exchanges and transformations; its fruit is the by-product of the ongoing activity. Lovers are not planning to "make" a child; they simply enjoy making love, and a child may come out as a by-product of their experience. The artist is not laboriously building a work of art; he is functioning as a participant in the beauty of the cosmic adventure, and he expresses his experience in a painting, a sculpture, a symphony, a poem, or an essay. The leader of an army is not so much "conquering" another country; he is satisfying his own and his nation's appetite for power. The financier is not hoarding millions as a miser; he is expanding himself in values that are widely recognized and negotiable for almost anything he may want.

The process of evolution—in the cosmos as a whole and in each of us when we pursue our individuation—as Jung put it—is not merely a growth in size within a set of unchanging dimensions; it is a transformation to more and more complex orders of dimensionality and existence.

It is not simply an enrichment of an established pattern of living; it is a series of successive emergences of new structures, each new one transcending its predecessor—from the atom to the molecule, from the molecule to the cell, from the cell to the organ, from the organ to the organism, and so on through all forms of life—until the growing tip of the cosmos has reached a level of self-reflexiveness, of which man is the most outstanding specimen that we know. This self-reflexiveness is for him a constant invitation to experiment with the forms of life that surround him, and with himself as well, curious as he is to see what happens to the evolutionary process when he puts his hand to it.

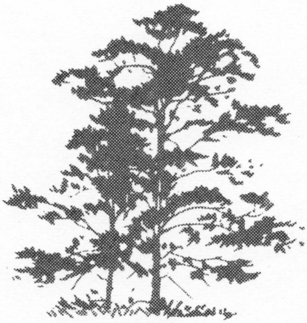
Our role as observers becomes a groping kennetic inquiry, a search for richer formulations, a ceaseless creation of new meanings that become, as they materialize, the structural constituents of our world-in-becoming. Bringing substance out of itself and integrating it in firm orders of existence is seen as the central creative function of this self-renewing activity. As the wood of the tree is the by-product of the activity of the sap that it locks in definite channels, so theories and institutions are by-products of man's creative energies, which they channellize and direct to produce the fruits of our culture.

IN THE LIGHT of this scheme of thinking, we evaluate people and events differently. They are "normal" to the extent that they yield to the evolutionary urge and facilitate its implosion to richer and richer orders of existence. Those who seem to slow down this process, or to stop it temporarily, cannot stop it for good, because this process is the basic reality that makes their very interference possible. They are, in spite of themselves, an expression of what they resist.

We have seen wars between two nations that brought their mutual relation to a clashing climax and eventually turned it into one of friendship and cooperation. Wars of religion, after centuries of bloodshed and arguments, become ecumenical encounters where formerly estranged parties grow to a better understanding of the oneness of humankind beyond the narrow borders of their own warring field. Each World War of this century was followed by a more keenly felt need to bring the world of humans together, first by the improvised invention of a League of Nations, and later by the creation of the United Nations with a surrounding cluster of quietly effective agencies.

AND SO, the world goes on. We accept it, trusting that, whatever are the present strains and sufferings, the final outcome will be victory in a metamorphosis for which we can only hope, without being able to picture to ourselves what it will be like when it comes. The beauty and the appropriateness of what was timely yesterday is no indication of its permanence. To keep it in existence may be doing violence to the vital forces; it may be an unwitting attempt to stop the formative tendency in its forward thrust. Destruction of obsolete characteristics becomes a constructive aspect of the ongoing process, a necessary condition of its advance. To accept this way of looking at the world and to make our behavior conform to it becomes the self-fulfilling activity of whoever and whatever functions where it belongs and as it should in the space-time WIGO. In such an acceptance, we shall find peace of mind and joy in the heart. It goes with the feeling that one's job of the moment is done and new opportunities are opening up in the unknown that keeps welcoming you tomorrow and tomorrow.

This is also a way of envisaging death. Here, the term covers both the total death of the self and the partial death of any segment of the self. The practive of this partial death, accepted as a normal condition of living, means detachment or readiness to give up anything that was held in high value for a time. When I go back to the days of my total belief in the Christian version of human experience, I recognize a reference to this mystery of death and rebirth in certain words of Paul the Apostle. *"Quotidie morior,"* "I die every day," he said once. Elsewhere he wrote: *"Mihi vivere Christus est, and mori lucrum,"* which could be translated, in modern terms: "For me, to live is to act the Christ function—i.e., the function of a conscious and willing participant-observer in the ongoing cosmos—and to die is a gain."



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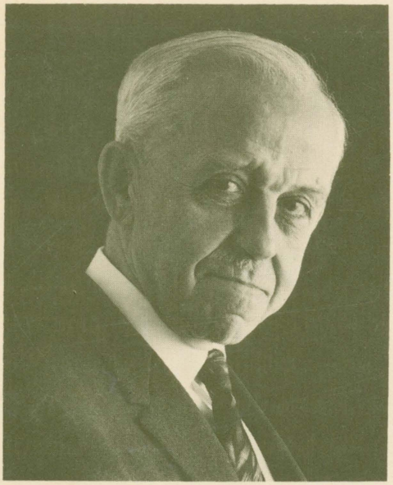

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He "discovered" general semantics in 1939. It helped him to understand his past and his present: why he had left the priesthood as a profession, why he could not accept most of what is being taught and practiced as psychology, why there is such turmoil in people's minds and hearts today, why so many institutions are cracking all over.

Since his formal retirement from management consulting work seventeen years ago, Dr. Bois has taught general semantics at Viewpoints Institute, Los Angeles; at U.C.L.A. Extension; and in the School of Public Administration, U.S.C. This book is the fifth in a series that describes his itinerary from standard scientific orientation to creative relativity in the sciences of man. His previous works are: *Explorations in Awareness* (Harper & Row, 1957); *The Art of Awareness* (Wm. C. Brown Co., 1966); *Communication as Creative Experience* (Viewpoints Institute, 1968); and *Breeds of Men* (Harper & Row, 1970).